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PRÓLOGO

FOREWORD

It is an honour and gives me great delight to write the foreword for the RNFC 2019 report.

Our personal and professional lives have ruptured since I met so many of you at the 3rd Reunion in Madrid in February 2020 and you have often been in my thoughts over the past months.

In the context of a global pandemic, it was a challenge to write and publish the 2019 report. The report is testament to the commitment of all the participating hospitals and teams to the RNFC and the focus on providing hip fracture patients with care that's aligned to international best practice standards.

More hospitals are participating in the RNFC and more cases are being captured and I commend, congratulate and thank the team who have produced this analysis.
Their ongoing efforts and the efforts of those involved in the larger healthcare workforce providing care to people who break their hips has lead to meaningful change and real improvements in patient outcomes.

The publication of this year's RNFC 2019 report continues to show the improvements that are being made in the care of these patients; people are being operated on earlier, mobilised earlier and consequently more people are returning home with better longer-term mobility, which is what matters most to older people.

When you are immersed in giving care and measuring care, you often do not realize the impact the RNFC has on the lives of older people all over Spain who break their hips.
Indeed, internationally the RNFC is lauded as being an exemplar national hip fracture audit to learn from.

As it matures, the RNFC will become a powerful resource for you and in addition to a focus on improving patient care and outcomes, it's remit will broaden and will influence other key areas eg health policy, service design, research.

Lastly, none of the above would have been achieved without the efforts, enthusiasm and vision of all those involved. New and significant challenges lie ahead and the Fragility Fracture Network (FFN) and the Irish Hip Fracture Database look forward to continuing the journey with you.

Stay safe

Dr. Emer Ahern
Consultant Orthogeriatrician
Lead Irish Hip Fracture Database
Chair Hip Fracture Audit Special Interest Group, FFN

PRESENTATION:

"If you want to go fast, go alone;
but if you want to go far, go together"
(African proverb)

2019 is the third whole year in which this growing group of professionals who support the Registro Nacional de Fracturas de Cadena [Spanish National Hip Fracture Registry] (RNFC) have joined forces and accomplished significant achievements. This Report is a summary, intended to disseminate all the work that has been done, and we would like to invite you to read it in detail. It is also the expression of our recognition and appreciation of the effort made by everyone concerned. Without the daily voluntary and altruistic commitment of the health professionals who have added this extra task to their already busy workload, it would not be possible to enjoy this wealth of information about hip fracture process in our country. Besides, keeping the related research lines open would be unimaginable and achieving a global improvement in quality of care would never even have been considered.

Three continuous years of work have brought stability to the Registry, which is no longer a project, as it has become a reality. A reality appreciated for its results, the healthcare improvements it brings, and its international support. It is also looking forward the progressive, necessary and deeply desired acknowledge of the administrations, i.e. the Autonomous Communities and the Spanish Ministry of Health, ultimately leading to the institutionalisation of the project and its guaranteed continuity. However, far from lapsing into self-complacency, the satisfaction that is always derived from looking back and reading a Report like this one, spurs us all on to discover new challenges for the future, new frontiers to cross and new accomplishments to achieve. These objectives are clear to all of us, they are based on a healthy ambition to grow an increasingly greater understanding of how the process of suffering a hip fracture takes place, with the aim of finding ways that will enable us to improve patient outcomes and put the new knowledge obtained into practice. We will go far, because we go together, as the proverb that precedes these lines goes.

The names of the members of the RNFC, on the different levels, are stated explicitly in the Report. We would not like to forget anyone, since no effort should go unrecognised. The professionals, usually doctors and nurses, who collect and submit the data are included, as other numerous members of the Working Group. We trust that the Report overall will help them and everyone else to realize that all their hard work is worthwhile and that this great team is reaping excellent results. A special mention should be made of the Registry staff, particularly the data managers, the technical secretariat and the IdiPAZ staff, whose effectiveness and efficiency are paradigmatic. They are not seen, but they are always there.

Our acknowledgements must also mention, once again, the competitive grants received from highly different institutions such as the Fundación MAPFRE (Principal Investigator: Pilar Sáez López), the Fundación Mutua Madrileña (Principal Investigator: Paloma Gómez Campelo), the World Health Organization (Grant collected at its headquarters in Geneva by a delegation comprising Pilar Sáez López, Cristina Ojeda Thies and Paloma Gómez Campelo, as was mentioned in the 2018 Report). Although the following is something of a sneak preview of information pertaining to 2020, on account of its importance, it should be mentioned that after several unsuccessful attempts in previous calls, this year the RNFC has been granted an AES-Instituto Carlos III research grant for the project submitted by Pilar Sáez López. Other colleagues have submitted applications and projects for competitive grants. Not all of them can be successful, but he or she who dares eventually wins, so we would like to encourage everyone to continue on the same path.

We also want to express our gratitude to the sponsors whose continued donations have constantly helped to support the Registry financially, and also for helping in its social appreciation. As in previous years, UCB, AMGEN, ABBOTT and FAES FARMA have been kindly neccesary travel companions.

Neither can we forget the patients with hip fractures who have given their consent for their data to be used, because they are the reason of our work and will ultimately benefit from the knowledge that the RNFC will and is already generating, also allowing those who come later to benefit themselves of their generosity and from the generosity of their predecessors.

This Report is being completed now, at the end of 2020, a year in which our society was hit in the toughest and most unexpected way in recent decades and probable in the last century by the COVID pandemic. The pandemic has taken away from frontline healthcare professionals virtually all our time, which we have dedicated to healthcare, and almost all our energy to overcome challenges we could barely have imagined. We and our collegues keep the pride and satisfaction of doing our duty the best we can and the intellectual stimulus of going through a new and unknown disease. We must now recover our hope in the future and the joy of sharing our profession and life. Collaborating in the Registry is one good way of fulfilling these good wishes, with the passion of rekindling our great interest for helping our patients and return to our previous projects, walking together, with the conviction that going together we will go further. We are counting on everyone, because everyone is needed, and call upon anyone who wants to join in the future to continue to make the RNFC, our common project, an even greater one.

Pilar Sáez López
Juan Ignacio González Montalvo

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Gregorio Jiménez Díaz, *Natalia González García, María Madrigal López.*

▸ HOSPITAL GENERAL DE LA DEFENSA. ZARAGOZA
Carmen Deza Pérez, *Raquel Rodríguez Herrero.*

▸ HOSPITAL VIRGEN DE LA LUZ. CUENCA
Ignacio Maestre.

▸ COMPLEJO UNIVERSITARIO TORRECÁRDENAS. ALMERÍA
Juan Manuel Fernandez Domínguez, *Antoine Nicolas Najem Rizk.*

▸ HOSPITAL DE LA SANTA CREU. TORTOSA-TARRAGONA
María Cristina Rodríguez González, *Pablo Alessandro Garibaldi Tolmos.*

CENTRES PARTICIPATING IN THE RNFC (2019)

ASTURIAS
- *Hospital de la Cruz Roja (Gijón)*
- *Hospital Universitario de Cabueñes (Gijón)*
- *Hospital Vital Álvarez-Buylla (Mieres)*
- *Hospital Monte Naranco (Oviedo)*

CANTABRIA*
- *Hospital Universitario Marqués de Valdecilla (Santander)**

EUSKADI
- *Hospital Comarcal de Alto Deba (Guipúzkoa)*
- *Hospital Universitario de Donostia (Guipúzkoa)**
- *Hospital Universitario de Basurto (Vizcaya)**

NAVARRA
- *Complejo Hospitalario de Navarra*
- *Hospital Reina Sofía (Tudela-Navarra)*

CATALUÑA
- *Consorci Sanitari El Carme (Badalona, Barcelona)*
- *Consorci Sanitari Garraf (Barcelona)*
- *Hospital de Terrassa - Consorci Sanitari de Terrassa (Barcelona)*
- *Hospital Sant Jaume de Mataró (Mataró, Barcelona)**
- *Hospital Universitari de Bellvitge (HUB) (Barcelona)*
- *Hospital de la Santa Creu i Sant Pau (Barcelona)**
- *Hospital Universitario Mútua de Terrasa (Terrassa, Barcelona)*
- *Parc Hospitalari Marti i Julià (Salt, Girona)*
- *Hospital d'Olot i Comarcal de la Garrotxa (Girona)*
- *Hosp Universitario Arnau de Vilanova / H. U. de Santa María (Lleida)*
- *Hospital de la Santa Creu. (Tortosa - Tarragona)*
- *Hospital Sociosanitari Francolí (Tarragona)*
- *Hospital El Pilar (Grupo Quirónsalud, Barcelona)**
- *Hospital Universitario Dexeus (Grupo Quironsalud, Barcelona)**
- *Fundación Privada Hospital Asil Granollers (Granollers, Barcelona)**

GALICIA
- *Complejo Hospitalario Universitario de Ourense**
- *Hospital Alvaro Cunqueiro (Vigo)*
- *Hospital Clínico Universitario de Santiago*

CASTILLA Y LEÓN
- *Complejo Asistencial de Ávila*
- *Complejo Asistencial de Segovia*
- *Complejo Asistencial Universitario de León*
- *Complejo Asistencial Universitario de Palencia*
- *Hospital Clínico Universitario de Valladolid*
- *Hospital del Bierzo (Ponferrada, León)*
- *Hospital Santos Reyes (Aranda de Duero, Burgos)*

EXTREMADURA
- *Hospital Virgen del Puerto (Plasencia, Cáceres)*

COMUNIDAD DE MADRID
- *Hospital Central de la Defensa Gómez Ulla (Madrid)*
- *Hospital Clínico San Carlos (Madrid)*
- *Hospital de El Escorial (El Escorial, Madrid)**
- *Hospital del Henares (Coslada, Madrid)*
- *Hospital General de Villalba (Collado Villalba, Madrid)*
- *Hospital General Universitario Gregorio Marañón (Madrid)*
- *Hospital La Luz (Grupo Quirónsalud, Madrid)*
- *Hospital Universitario de Getafe (Getafe, Madrid)*
- *Hospital Universitario del Sureste (Arganda del Rey, Madrid)*
- *Hospital Universitario Fundación Alcorcón (Alcorcón, Madrid)**
- *Hospital Universitario Fundación Jiménez Díaz (Madrid)*
- *Hospital Universitario Infanta Elena (Valdemoro, Madrid)*
- *Hospital Universitario Infanta Leonor (Madrid)*
- *Hospital Universitario Infanta Sofía (S.S. de los Reyes, Madrid)*
- *Hospital Universitario de Móstoles (Móstoles, Madrid)*
- *Hospital Universitario Príncipe de Asturias (Alcalá de Henares, Madrid)**
- *Hospital Universitario Puerta de Hierro (Majadahonda, Madrid)*
- *Hospital Universitario Ramón y Cajal (Madrid)*
- *Hospital Universitario Rey Juan Carlos (Móstoles, Madrid)*
- *Hospital Universitario Severo Ochoa (Leganés, Madrid)*

ARAGÓN
- *Hospital Provincial Sagrado Corazón de Jesús (Huesca)*
- *Hospital Obispo Polanco (Teruel)*
- *Hospital General de la Defensa (Zaragoza)**
- *Hospital Nuestra Señora de Gracia (Zaragoza)*
- *Hospital Universitario Miguel Servet (Zaragoza)*

ISLAS BALEARES
- *Hospital de Manacor (Mallorca)*

COMUNIDAD VALENCIANA
- *HLA Clínica Vistahermosa. (Alicante)*
- *Hospital Vega Baja (Orihuela, Alicante)*
- *Hospital de Manises (Valencia)*
- *Hospital Universitario y Politécnico de La Fe (Valencia)*

CASTILLA - LA MANCHA
- *Complejo Hospitalario Universitario de Albacete (Albacete)*
- *Hospital General de Almansa (Albacete)*
- *Hospital General de Villarrobledo (Albacete)*
- *Hospital General Universitario de Ciudad Real (Ciudad Real)*
- *Hospital Universitario de Guadalajara (Guadalajara)*
- *Hospital Virgen de La Luz (Cuenca)**
- *Hospital Virgen de la Salud (Toledo)*

MURCIA
- *Complejo Hospitalario Universitario de Cartagena (Murcia)*
- *Hospital Universitario Morales Meseguer (Murcia)*

ANDALUCIA
- *Hospital Regional Universitario De Málaga (Málaga)*
- *Hospital Valle de los Pedroches (Pozoblanco - Córdoba)**
- *Complejo Hospitalario Torrecárdenas (Almería)**

ISLAS CANARIAS
- *Hospital Universitario Nuestra Señora de la Candelaria (Santa Cruz de Tenerife)*
- *Hospital Universitario de Canarias (Santa Cruz de Tenerife)**

Total: 80 hospitals

**New joiners*

RNFC

The Registro Nacional de Fracturas de Cadera [Spanish National Hip Fracture Registry] (RNFC) is a large database that collects healthcare information on patients with hip fractures (HF) during the acute phase and for up to one month afterwards. The Registry was started in 2016, meaning that 2019 is its fourth year of operation and is the third one with a whole year of data. The data are obtained altruistically and voluntarily by the doctors who take care of these patients. Its main objective is to ascertain the course of this disease in depth and to improve care to the people who suffer from it. For this purpose, comprehensive, standardised and reliable data are required, healthcare standards and objectives must be established, hospitals must be compared and the results obtained must be periodically and continuously reviewed in order to drive towards continuous improvement in healthcare quality. Its results and activity in 2019 are presented in this Report. Reports from previous years can be consulted on the Registry's website (http://rnfc.es/publicaciones-rnfc)

In 2019, professionals from 80 hospitals across the country participated, providing data on 13,181 patients, bringing the total number of registered cases to a total of 31,820 in December of that year. The most frequent profile continues to be that of a female patient (76% of cases) of very advanced age (mean age 87 years) and with a high frequency of cognitive impairment (44% of cases). Virtually all (98%) patients undergo surgery. One month after the fracture, 70% of the patients who previously had independent mobility recover it, and 62% of those who live at home return there. A much more detailed description of the main variables can be found in this Report and a complete overview of all the data is available on the aforementioned website (http://rnfc.es/publicaciones-rnfc) under the heading “Informe 2019 por hospitales” [2019 Report by Hospitals].

Of the many results and data already offered by this large database, the comparative analysis conducted from the moment when the Registry information began to be collected shows that improvements of varying extents are being achieved in patient care in a set of variables such as early mobilisation after surgery, reduced delay to surgery, lower emergence of pressure ulcers during hospitalization and shorter mean hospital stay. Other goals, such as increasing the percentage of patients to whom osteoprotective treatment is prescribed at discharge, or improved mobility at 30 days, are proving to be more difficult to achieve.

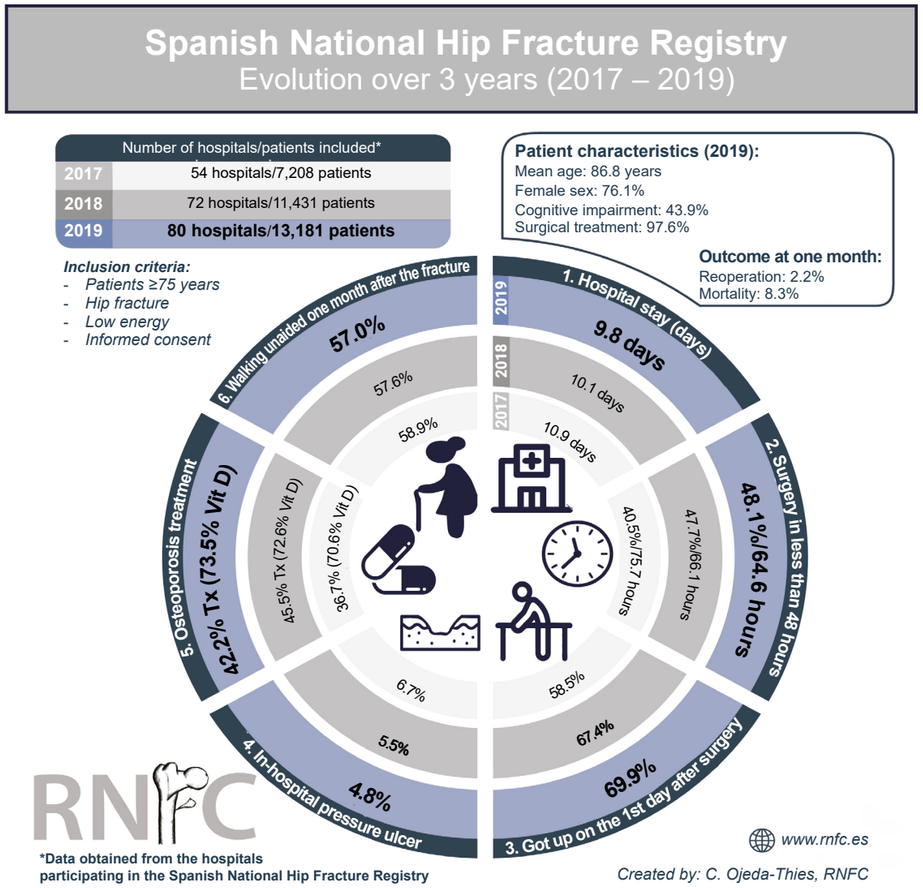
A brief but very powerful and new section is the summary of the international impact gradually being acquired by the RNFC, which spans the publication of the first international comparison of Spanish outcomes and the presentation of many of these results at different international congresses through to participation in the Fragility Fracture Network's activities and in studies with colleagues from abroad, such as the groundbreaking IMPACT Audit study on the influence of the Covid-19 pandemic on patients with hip fractures.

The Report presents the experiences of three hospitals (Hospital Gregorio Marañón in Madrid, Hospital Mutua de Tarrasa in Barcelona and Hospital Nuestra Señora de Gracia in Zaragoza) that explain the different ways in which participation in the Registry has contributed to improving daily care for their hip fracture patients. Disseminating these experiences may act as an incentive for the rest of the participating hospitals and even encourage others to take the decision to join.

5 Executive Summary

Finally, the closing sections include the RNFC's scientific activities and achievements. The content and the status of active research projects straddling a wide variety of topics are described in abstract format, such as the comparison of the evolution of patients with subtrochanteric fractures versus pertrochanteric fractures, differences in the process and in the outcomes obtained in the different autonomous communities, interventions to improve quality and the evolution of quality indicators, comparison between the profiles of patient in institutions and in private homes, the influence of cognitive impairment on evolution after hip fracture, the factors associated with a higher mortality one month after the fracture, the degree of representativeness of the RNFC's data versus the national casuistry data compiled through the Minimum Basic Data Set (CMBD), the study of the profile of patients treated with antiosteoporotic medication on discharge from hospital and the influence of clinical variability in the management of this health problem. Finally, mention is made of the publications in national and international journals that have already resulted from the Registry's activity.

In conclusion, the pages of this 2019 Report show that the RNFC is in fine health. The high number of participating hospitals and cases included, the increasingly greater knowledge of the reality of this process in Spain, the evolution of quality indicators, the growing international impact, utility in the daily activity of specific hospitals and the research contents generated are all symptoms of this fine fettle.



RNFC Table of Results 2017-2018-2019

Below are the tables with the main results from the RNFC and their evolution over the three-year period, which provide us with an overview of how things currently stand.

General Data

	2017	2018	2019
Hospitals/Cases	54/7,208	72/11,431	80/13,181
Age (mean)	86.7	86.8	86.8
Sex (% female)	75.1	75.6	76.1

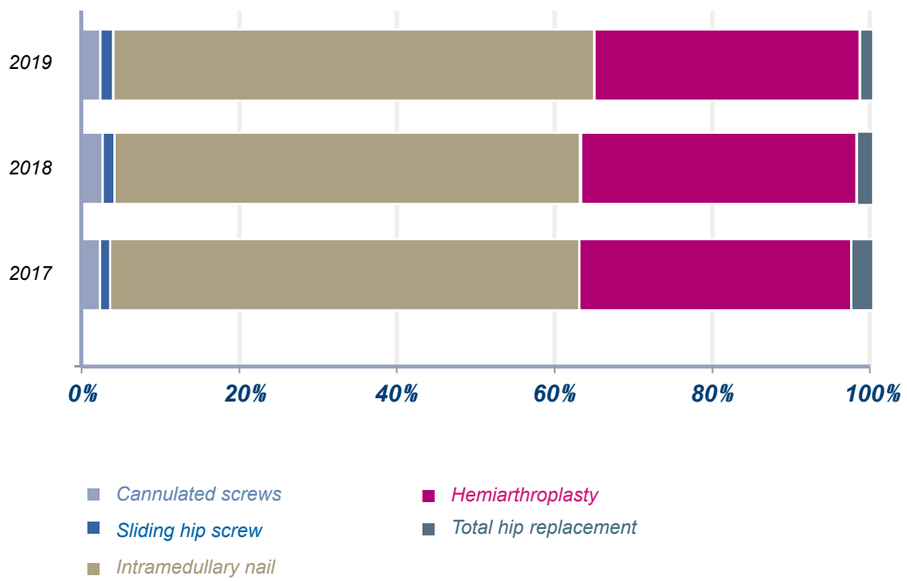
Types of Fracture, Surgery and Anaesthesia

Fracture type (valid %)	2017	2018	2019
Pertrochanteric	52.4%	51.7%	51.8%
Subcapital	39.7%	39.7%	38.2%
Subtrochanteric	7.3%	7.5%	8.8%
Surgery (valid %)	97.6%	96.9%	97.6%

Type of surgery (valid %)	2017	2018	2019
Cannulated screws	2.1%	2.6%	2.2%
Sliding hip screw	1.1%	1.2%	1.4%
Intramedullary nail	59.6%	59.1%	60.5%
Hemiarthroplasty	34.1%	34.9%	33.2%
Total hip replacement	3.1%	2.2%	2.7%

Fracture Type 2017/2018/2019

Type of Surgery 2017/2018/2019



Intrahospital evolution

	2017	2018	2019
Mean delay to surgery (mean hours)	75.7	66.1	64.6
Hospital stay (mean days)	11 (SD 6.7)	10.1 (SD 6)	9.8 (SD 6.3)
Hospital mortality (%)	4.4	4.7	4.9
30-day mortality (valid %)	7.6	8.1	8.3

The reduction in preoperative wait time was modest in 2019 compared to the reduction observed between 2017 and 2018. Hospital stay has decreased slightly recently. The mortality rate in the acute phase and at 30 days has remained stable.

Functional and clinical characteristics

	2017	2018	2019
Patients with cognitive impairment (valid %)*	44.1	44.5	43.9
Pre-fracture autonomous mobility (valid %)	82.7	82.4	81.8
Autonomous mobility at 30 days (valid %)	58.9	57.6	57
Readmission within 30 days (valid %)	2.7	3.1	6.3
Reoperation at 30 days (%)	2.0	2.2	2.2
Geriatrician/IM collaborating clinician (valid %)	80.3/13.5	76/18.1	67.2/22.4
OP. Tx. Discharge/30 d (valid %)	36.7/41	45.5/47.9	42.2/42.8

OP: Osteoporosis
** Cognitive impairment: Pfeiffer test score >3*

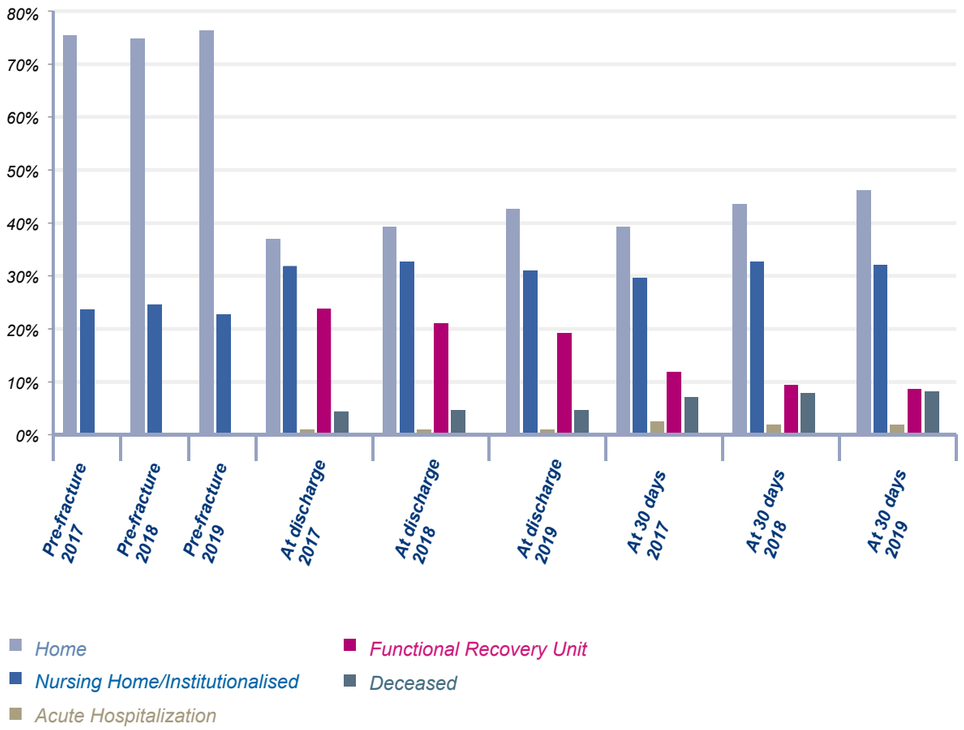
In the course of these three years, functional status prior to the fracture has been similar, with a slight increase in the percentage of patients with cognitive impairment. Autonomous ambulation one month after the fracture improved progressively over the years evaluated. The need for readmission and reoperation in the month after the surgery is low and stable over the years.

The percentage of readmitted patients increased in the last year since readmission for medical reasons has also been recorded (formerly, it was only recorded.....) if it was for surgical reasons).

Graphical results of the RNFC 2017-2018-2019

Some of the RNFC results and their evolution over the three years of data collection are represented as graphs

Location before the fracture, after discharge and at 30 days 2017/2018/2019



Type of Anaesthesia 2017/2018/2019

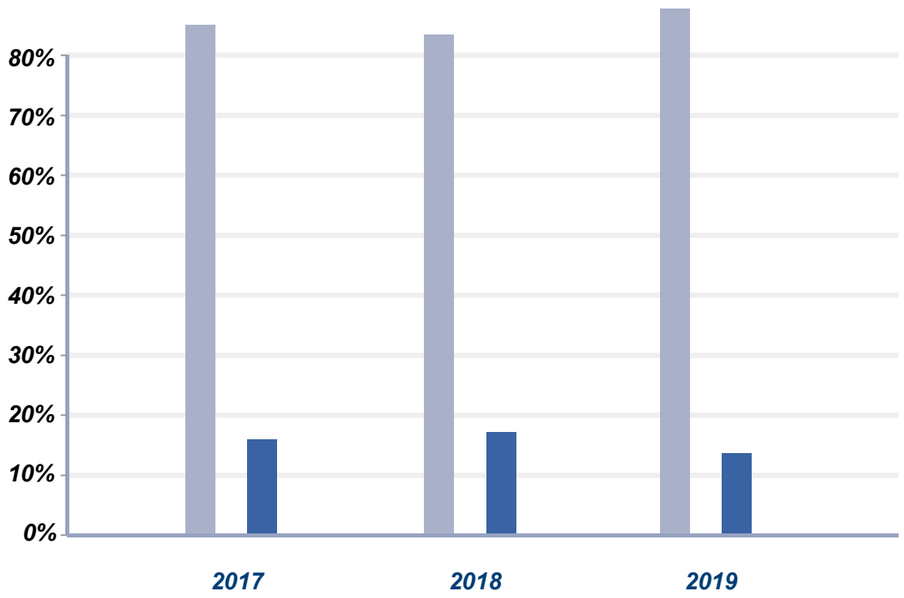
	2017	2018	2019
Neuraxial (valid %)	92.7	93.7	93.1
General (valid %)	6.9	5.8	6.3
Other regional (valid %)	0.4	0.5	0.6

Neuraxial anaesthesia is the most commonly used type, with percentages of around 93%

Anaesthetic block 2017/2018/2019

	2017	2018	2019
No block (valid %)	84.5	83.7	86.3
Block (valid %)	15.5	16.3	13.7

Anaesthetic block

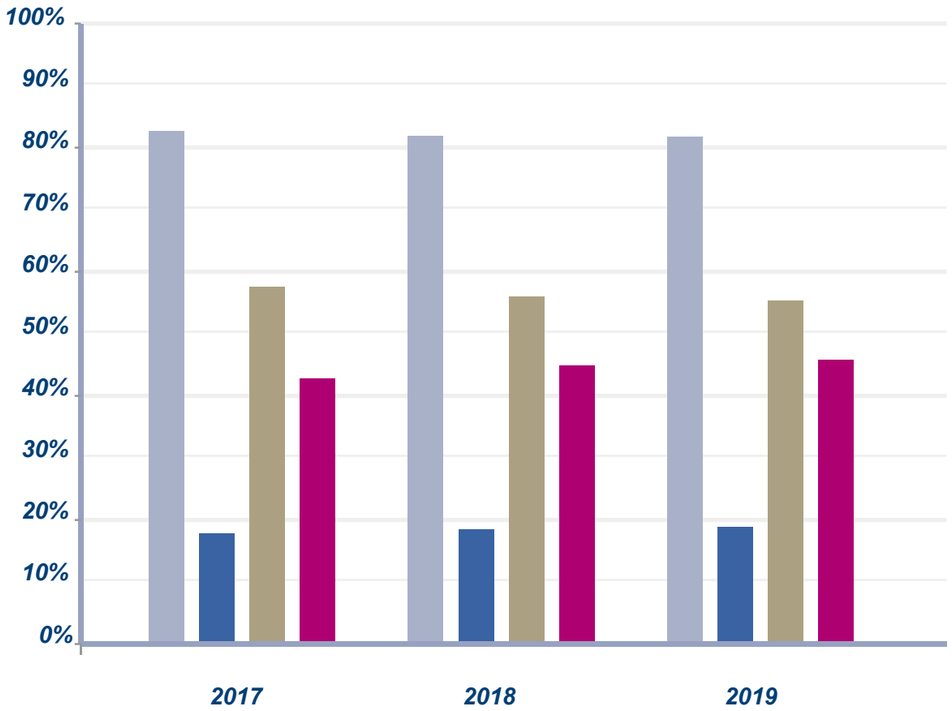


Pressure ulcers in patients from the RNFC

	2017	2018	2019
Do not have pressure ulcers (valid %)	93.3%	94.5%	95.2%
Do have pressure ulcers (valid %)	6.7%	5.5%	4.8%

Development of pressure ulcers during hospitalization fell over the three years in which data were collected by the RNFC.

Previous mobility and 30 days after the fracture



Mobility before the fracture 2017/2018/2019

	2017	2018	2019
Independent mobility inside and/or outside the home (1,2,3,4,5 and 6) (valid %)	82.7	82.4	81.8
Mobility in the home with the help of others or non-mobility (7,8,9 and 10) (valid %)	17.3	17.6	18.2

Mobility 30 days after the fracture 2017/2018/2019

	2017	2018	2019
Independent mobility inside and/or outside the home (1,2,3,4,5 and 6) (valid %)	58.9	57.6	57.0
Mobility in the home with the help of others or non-mobility (7,8,9 and 10) (valid %)	41.1	42.4	43.0

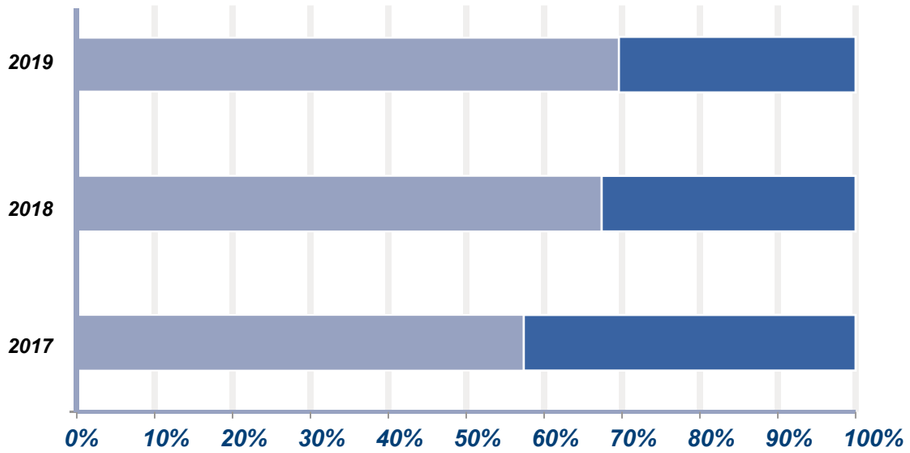
Functional loss 2017/2018/2019

	2017	2018	2019
Autonomous patients pre-fracture – patients autonomous at 30 days	32.3	31.7	31.4

Functional loss, described as the percentage of patients who have lost their previous ability to walk at least with the help of a walking frame 30 days after the fracture, has improved slightly over the years.
It should be noted that in the last year, the percentage of patients who are not allowed to put any weight on the fractured limb at the time of discharge has been captured. This was ultimately 9.3%, which impacts mobility at 30 days.

Sitting up on the first day postoperative 2017/2018/2019

	2017	2018	2019
Do sit up on the first day postoperative (valid %)	58.5	67.4	69.9
Do not sit up on the first day postoperative (valid %)	41.5	32.6	30.1

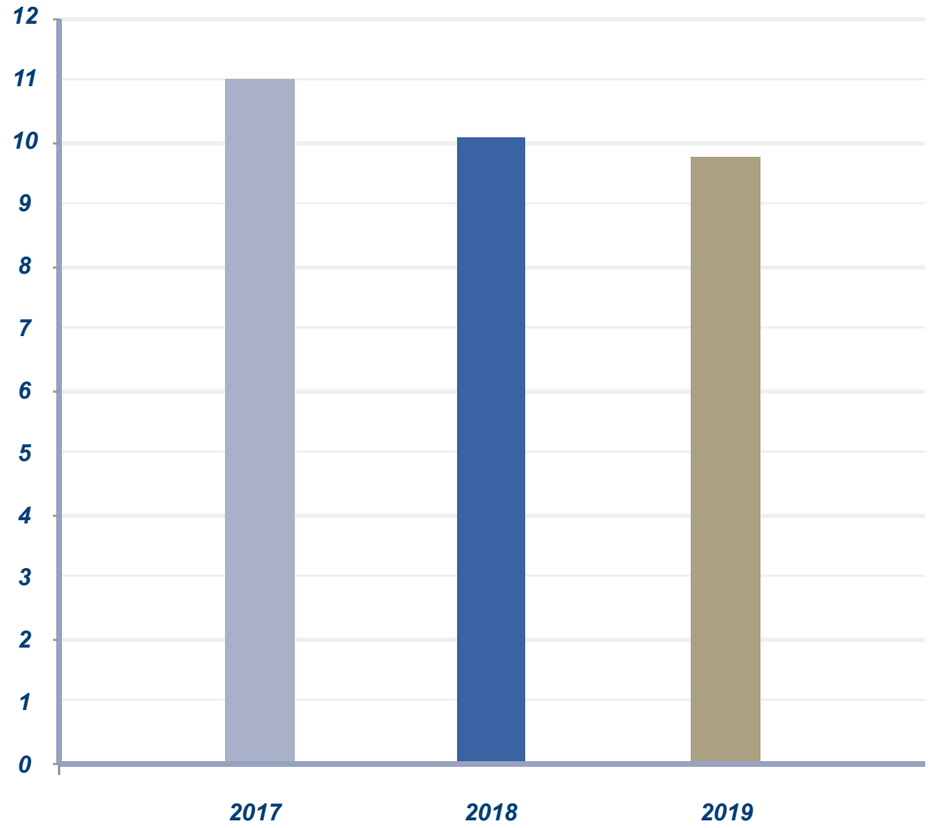


Hospital Stay 2017/2018/2019

	2017	2018	2019
Mean	11.0 days	10.1 days	9.8 days

Hospital stay diminished by one day between 2017 and 2018 and remained stable in 2019.

Mean Days Hospital Stay 2017/2018/2019

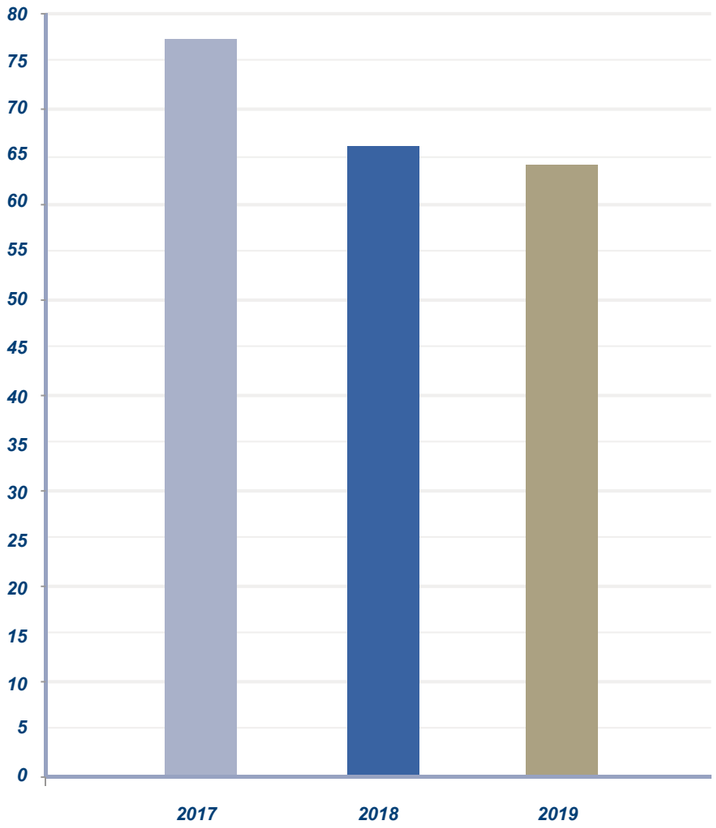


Delay to surgery (mean in hours)

	2017	2018	2019
Mean	75.7 h.	66.1 h.	64.6 h.

Delay to surgery, following a significant reduction between 2017 and 2018, maintained a modest improvement in 2019.

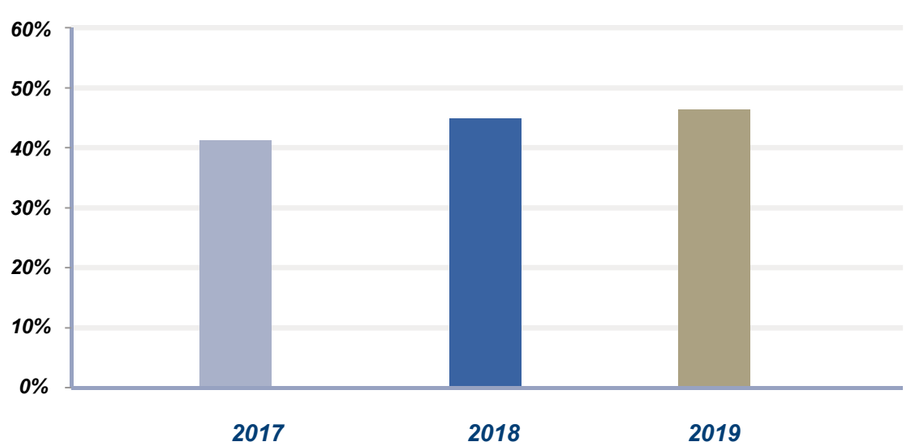
Delay to Surgery Mean Hours 2017/2018/2019



Delay to Surgery (% of persons operated within the first 48 hours of hospitalization)

	2017	2018	2019
Patients operated in less than 48 hours (valid %)	40.5	47.4	48.1
Patients operated more than 48 hours after admission (valid %)	59.5	52.6	51.9

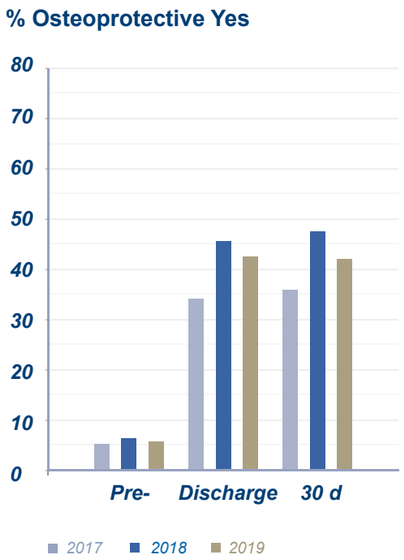
Percentage of patients operated in less than 48 hours 2017/2018/2019

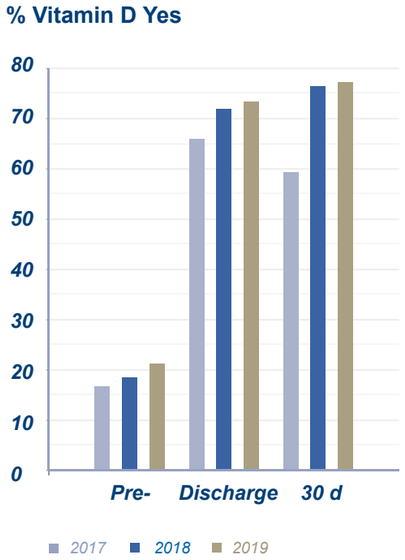


The usual form of expressing delay to surgery is the percentage of patients operated on in the initial hours. In 2019, 48% of patients underwent surgery in the first 48 hours of hospitalization, a figure that has gradually improved since the RNFC was implemented in 2017.

Osteoprotective Treatment/Previous Vitamin D/At Discharge/ After 30 days 2017/2018/2019

		2017	2018	2019
Osteoprotective (valid %)	Pre-fracture	5.0	6.5	5.9
	At discharge	36.7	45.5	42.2
	30 days	41	47.9	42.8
Vitamin D (valid %)	Pre-fracture	16.8	17.8	21.5
	At discharge	70.6	72.6	73.5
	30 days	70.3	76.1	77.8





The percentage of patients with an osteoporosis treatment prescription increased considerably from 2017 to 2018 and diminished slightly in in 2019, but we are still far from reaching the best quality standards.
Vitamin D prescriptions have increased progressively.

Reoperation at 30 days 2017/2018/2019

	2017	2018	2019
Reduction of dislocated prosthesis (%)	31 (0.4%)	50 (0.5%)	62 (0.5%)
Irrigation or debridement (%)	38 (0.5%)	72 (0.7%)	79 (0.6%)
Implant removal (%)	9 (0.1%)	15 (0.1%)	11 (0.1%)
Revision of internal fixation (%)	14 (0.2%)	20 (0.2%)	24 (0.2%)
Conversion to hemiarthroplasty (%)	8 (0.1%)	22 (0.2%)	25 (0.2%)
Conversion to total hip replacement (%)	9 (0.1%)	10 (0.1%)	20 (0.2%)
Girdlestone/resection arthroplasty (%)	7 (0.1%)	6 (0.1%)	5 (0.1%)
Periprosthetic fracture management (%)	4 (0.1%)	12 (0.1%)	10 (0.1%)
Others (%)	21 (0.3%)	31 (0.3%)	32 (0.3%)
Total (%)	141 (2%)	238 (2.2%)	268 (2.2%)

The table shows the reasons for reoperation within the 30 days after the fracture.

Quality Indicators and Standards

- In the initial months following the implementation of the RNFC in 2017, it was clear that there was room for improvement in some results. A group of experts, called the Comité de Indicadores [Indicators Committee] (IC), drew up a proposal for quality indicators and standards, as well as recommendations geared towards achieving these standards. All these measures target continuous monitoring and feedback with the participating hospitals locally, regionally and nationally, the main objective being to improve quality of care for hip fractures in elderly patients.
- Based on the hospitals that registered cases between January and May 2017, the IC selected seven quality indicators that met the criteria of 1) evaluating process or outcomes, 2) being clinically relevant for patients, and 3) being modifiable through changes in healthcare practice; and a quality standard was proposed as an objective to be achieved by the participating centres. This standard, expressed as a percentage, was the first quartile obtained by this group of hospitals. Similarly, 25 recommendations were proposed, based on the available clinical practice guidelines, with practical and specific measures to achieve each proposed quality standard.
- The representatives of all the participating hospitals were informed of the quality indicators and standards chosen and the recommendations were distributed throughout 2018, firstly through the corporate newsletter, then through the creation of 1,000 copies in pocket card format, and finally, in 2019, through a publication in the Spanish Journal of Geriatrics and Gerontology.

Evolution of the Quality Indicators in the RNFC 2017-2019

- The evolution of the results of the indicators in 2017 and 2019 and the quality standard proposed by each indicator are presented below. An improvement was observed in the following quality indicators: the percentage of patients undergoing surgery in less than 48 hours, the percentage of patients mobilised on the first day after surgery, the percentage of patients to whom antiosteoporotic treatment was prescribed at discharge, the percentage of patients with calcium supplementation at discharge, the percentage of patients with vitamin D supplementation at discharge and the percentage of patients with in-hospital pressure ulcers. The only quality indicator that did not improve was the percentage of patients with independent mobility at 30 days. None of the seven indicators achieved the corresponding quality standard, but they do show a positive trend towards continuous improvement.

	2017 (54 hospitals) n = 6,959	2019 (80 hospitals) n = 12,402	Standard	Change 2017-2019
Proportion of patients undergoing surgery in <48 h, n (%)	2,675 (40.5)	5,728 (48.1)	63%	+ 18.8%
Proportion of patients mobilised on the first day after surgery, n (%)	3,890 (58.5)	8,314 (69.9)	86%	+ 19.5%
Proportion of patients prescribed antiosteoporotic treatment at discharge, n (%)	2,425 (36.7)	4,975 (42.2)	61%	+ 15.0%
Proportion of patients with calcium supplementation at discharge, n (%)	3,227 (49.6)	6,513 (55.3)	77%	+ 11.5%
Proportion of patients with vitamin D supplementation at discharge, n (%)	4,599 (70.6)	8,664 (73.5)	92%	+ 4.1%
Proportion of patients with in-hospital pressure ulcers, n (%)	444 (6.7)	582 (4.8)	2.1%	-28.4%
Proportion of patients with independent mobility at 30 days, n (%)	3,402 (58.9)	6,179 (57)	70%	-3.3%

Report of the RNFC International Relations Committee

The year 2019 was important because of the major recognition gleaned by our registry as a result of the publication of our first report and an international comparison published in Osteoporosis International, plus the award received at the WHO General Assembly in May 2019.

Several reports were presented at international conferences such as EFORT (Lisbon, Portugal) and FFN (Oxford, United Kingdom, photo). At the latter, a pre-conference day was held with the different working groups, including one about registries, with a presentation about all the activity carried out by the registry to date. This presentation was received with great admiration by colleagues from other countries, who emphasised the rapid scientific consolidation of our registry despite its minimal funding and infrastructure.

Thus, the Chair of the FFN Regionalisation Committee, David Marsh, requested the support of the RNFC International Committee to support the FFN in establishing links with Latin America, particularly with the working groups that are trying to start up registries there. We were also invited to co-author a chapter on fragility fracture registries in the FFN's publication on Orthogeriatrics. This open-access publication has had a great success with more than 170,000 downloads.

Several RNFC members are collaborating with SEFRAOS and SEGG to translate this volume into Spanish, thereby increasing its scope.

Although it belongs to 2020 activity, when the COVID-19 pandemic hit Europe, given its impact in Spain, the RNFC was one of the first entities contacted by the Scottish Registry, which led an international project called IMPACT Audit, collecting data to assess the pandemic's impact on hip fracture patient management and outcomes, in addition to the management of trauma and orthopaedic surgery departments. More than 20 hospitals in Spain participated and contributed more than 1,000 cases, a very large percentage of which were collected worldwide from more than 100 hospitals in 5 continents. The data analysis for this project is currently under way and it will undoubtedly provide a great deal of valuable information on the pandemic's impact on health systems, and we look forward to sharing it in the next report.

International communications:

- Castillon P, Nuñez J, Ojeda Thies C, Sáez-López P, Gonzalez Montalvo JI. Osteoporotic Hip Fractures In Spain. Are We On The Right Track? Data From The Prospective Spanish Hip Fracture Registry. 20th EFORT Congress, Lisbon, Portugal; 5–7 June 2019. Oral presentation

- Nuñez J, Castillon P, Ojeda Thies C, Sáez-López P, Gonzalez Montalvo JI. Low Incidence Of Anti-Osteoporosis Treatment After A Hip Fracture: Data From The Prospective Spanish Hip Fracture Registry. 20th EFORT Congress, Lisbon, Portugal; 5–7 June 2019. Poster presentation

- Ojeda-Thies C, Sáez-López P, Tarazona-Santabalbina F, Alarcón-Alarcón T, Montero Fernández N, Mora Fernández J et al. Spanish National Hip Fracture Registry (RNFC): Analysis Of Its First Annual Report And Comparison With Other Established Registries 20th EFORT Congress, Lisbon, Portugal; 5–7 June 2019. Poster presentation.

- Condorhuamán Alvarado PY, Menéndez Colino, Gutiérrez Misis A, González-Montalvo JI. Predictive factors of 1-year mortality after a hip fracture. A literature review. 8th Global FFN Congress Oxford, United Kingdom. 28–30 August 2019. Poster presentation.

- Condorhuamán Alvarado PY, AlarcónAlarcón T, Sáez-López P, Ojeda-Thies C, Gomez-Campelo P, Navarro-Castellanos L, Otero-Puime Á González- Montalvo JI. Antiosteoporotic treatment assessment in the Spanish National Hip Fracture Registry (RNFC). Profile of the patient treated and factors associated with the prescription. 8th Global FFN Congress Oxford, United Kingdom. 28–30 August 2019. Poster presentation.

Drs Patricia Condorhuamán and Cristina Ojeda -Thies, RNFC representatives at the FFN Annual Congress in Oxford, United Kingdom, in front of the Bodleian Library (29 August 2019)

During the opening cocktail at the FFN conference, at Divinity School, Oxford, United Kingdom (26 August 2019).

From left to right:
Prof Markus Seibel of the University of Sydney - founder of the SOS Fracture Alliance (www.sosfracturealliance.org.au).
Dr Colin Currie, Head of the Fragility Fracture Network Registry Working Group
Dr Cristina Ojeda Thies, international relations spokesperson of the Spanish National Hip Fracture Registry
Prof Dave Marsh, Regionalisation Chair of the Fragility Fracture Network, and Emeritus Professor at University College London.
Prof Paul Mitchell, Communication Director of the Fragility Fracture Network, President of Osteoporosis New Zealand and Professor of the University of Notre Dame, Australia.

EXPERIENCE OF THE HOSPITAL UNIVERSITARIO GREGORIO MARAÑÓN. MADRID.

Nuria Montero

The Hip Fracture Unit of the Hospital General Universitario Gregorio Marañón, comprised of Traumatology, Geriatrics and and Rehabilitation Departments. cares for approximately 420 hip fractures per year in patients over the age of 65. The recent multidisciplinary development of the clinical pathway for treating patients with hip fracture has served to update and standardise the process in our centre.

Participating in the Spanish National Hip Fracture Registry from the outset of the project and assessing our data comparatively with other centres with characteristics similar to our own has allowed us to pinpoint areas for improvement.

Although hip fracture surgery is regarded as an urgent in our centre, the main area of improvement was in delay to surgery, which was 85 hours in 2018. Only 25% of patients with hip fracture were operated on in less than 48 hours. The measures taken to attempt to improve these indicators were:

- Set up a daily operating room specifically for this type of surgery. Surgeries are scheduled for the initial hours of admission to the ward but are only performed Monday through Friday.
- Preferential evaluation by the anaesthesiologist in the Emergency Department (in less than 12 hours).
- Assessment of a change of indication of the type of anaesthesia, proposing general anaesthesia in patients who, as they are taking antiplatelet agents, were experiencing surgery delays of up to 5 days.

Thus, in 2019, we jointly managed to reduce the delay to surgery to 75 hours and increase the percentage of patients undergoing surgery in less than 48 hours to 30%. Other changes made during the patient's stay in the Emergency Department include:

- Changes in how patients over 65 years with hip fracture are identified in the hospital's computer system, which enables patients included in the clinical pathway to be flagged.
- Priority admission from the Emergency Department to pre-established beds in the Hip Fracture Unit for the elderly from Admissions.
- Eliminating the indication for soft traction in patients with pertrochanteric fractures.
- The introduction of iron analysis into the Emergency department lab tests to be able to assess the need for intravenous iron therapy from that moment on.

Areas for improvement related to the quality indicators proposed by the RNFC in the Traumatology wards were:

- Before 2019, nerve blocks had not been performed in older patients with hip fracture. They are now being carried out in some cases, and the Anaesthesia department is studying the creation of a protocol for them.
- Getting clinically stable patients to sit up in a chair within the first 24 hours after surgery following the indications of the Traumatologist and/or Geriatrician. In 2018, early sitting up was only indicated in 5% of surgical patients. In 2019, we managed to get 17%

of patients to sit up within 24 hours.

- Standardise follow-up X-ray times in the morning after surgery to ascertain, as soon as possible, if the patient can bear weight.
- Priority in transferring patients over 65 with hip fracture to beds in our unit from the Admissions department.
- Creation of a pictogram explaining the most important steps in the admission process to the patient and their relatives.
- Greater involvement of the specialist Geriatrics Nurse in training assistants on the Traumatology and other surgery wards to reduce the percentage of patients who develop pressure ulcers during hospitalization.
- Prepare Nursing recommendations for basic at-home care and to ensure that process-related medication (analgesics, low molecular weight heparin, vitamin D and specific osteoporosis medicines) is taken properly.

Thanks to all these changes, independent mobility at 30 days of patients who underwent surgery has slightly improved. In 2018, only 28% of patients achieved this mobility, whereas 31% did so in 2019. We believe that the forthcoming preparation of a care manual with personalised instructions by the Rehabilitation Department will be very useful in this regard. In addition, they intend to promote health education, including relatives and/or caregivers in the teaching of patient care during treatment sessions. This could help to improve patients' functional status at home.

Hospital Gregorio Marañon. Madrid

ANNUAL REPORT 2019
10 Hospital experiences with the RNFC

EXPERIENCE OF THE HOSPITAL UNIVERSITARIO MUTUA DE TARRASA. BARCELONA.

Pablo Castillón

Hospital Universitario Mutua de Tarrasa. Barcelona

Every year, 250 hip fractures are admitted to the Hospital Universitario Mútua de Terrassa (HUMT). The mean patient age is 85 years. The Geriatric Traumatology Unit (UTG), in the Orthopaedic Surgery and Traumatology Department, has accepted all these admissions since June 2013. It is a Kammerlander model 4 orthogeriatric unit, i.e. with integrated multidisciplinary treatment and fast-track treatments (fast-track surgery). This unit was established as a Fracture Liason Service acknowledged with a bronze medal by the International Osteoporosis Foundation (IOF) in 2018.

The UTG's development strategy is divided into different projects, which include training, innovation, research and benchmarking. Training is imparted mainly through courses that involve the entire hospital; innovation through the introduction of new surgical and pain control techniques (iliofascial block), blood management programs and early postoperative rehabilitation, among other measures; research involves participation in local and international multicentre studies (HEALTH, HIP ATTACK); benchmarking involves participating in societies (Orhtogeriatrics Group of the Catalan Societat Catalana de Geriatria i Gerontologia-SCGG) and Registries (National Registry of Hip Fracture-RNFC).

We started participating in the RNFC in 2017. Interhospital comparison makes it possible to establish specific good practice criteria, define indicators to measure them and propose specific care quality standards. Tracking them improves the treatment we offer to hip fracture patients individually in each institution, but also regionally and nationally.

Most international clinical guidelines recommend that patients with hip fracture undergo surgery early. For this reason, the therapeutic efforts of the orthogeriatric units focus on reducing delay to surgery time. Although it is a quantitative indicator, it has a cascade effect that affects quality of care and multiple parameters such as pain, early mobilisation or the prevention of the onset of geriatric syndromes such as delirium or pressure ulcers. It thus improves the patients' and relatives' subjective perception of treatment quality.

At the HUMT, the mean delay to surgery has been cut from 52 hours (2017) to 49 hours (2018) and to 43 hours (2019). This has made it possible to fulfill the international criterion of operating on patients within 48 hours after admission.

It is particularly significant how this decrease has occurred largely due to concentrating surgeries in the first 48 hours after admission, which increased from 60% (2018) to 72% (2019).

Effective and early analgesic control is also a quality indicator provided for in the RNFC and in other international registries. At the HUMT, in 2013 iliofascial blocks were introduced into the analgesic treatment of hip fracture patients in the Emergency Department in the first 15 minutes following arrival at the Hospital and before the imaging tests. The RNFC has allowed us to realize that the use of peripheral nerve blocks is also a priority for many other centres in our country. The national dissemination of this analgesic treatment will enable us to begin to fulfill the international good clinical practice standards defined in the clinical guidelines (NICE, AAOS, etc.). Including anaesthesiologists in orthogeriatric units with integrated multidisciplinary treatment has been key in using these new analgesic techniques, as well as in early pre-surgical optimisation and blood-sparing programmes.

The RNFC points to a major variability at national level, both with regard to the quality indicators established and the resources available in the different Autonomous Communities. The existence or absence of Social Health Centres, Convalescence Centres or Functional Recovery Units is essential in the process of discharging patients from hospital, impacting mean hospitalization times and the destination of patients after discharge.

ANNUAL REPORT 2019
10 Hospital experiences with the RNFC

EXPERIENCE OF THE HOSPITAL NUESTRA SEÑORA DE GRACIA. ZARAGOZA.

Pilar Mesa

The Hospital Nuestra Señora de Gracia (HNSG), together with the Hospital Royo Villanova (HRV), is located in the Zaragoza I Sector of the Health Subdivision of the Autonomous Community of Aragon. The annual incidence of fractures in over-70s in the sector is usually around 250.

In 2009, the creation of an Orthogeriatric Unit (UOG) with beds in the Geriatrics Service at the HNSG, was managed independently and with shared responsibility between Geriatrics and Traumatology, was proposed and accepted. At that time, all patients went to the HRV Emergency room, where they underwent surgery and were then transferred to the Unit 48-72 hours later to start rehabilitation and prevent and/or control possible complications. Over the years, and by dint of a major effort, a large percentage of fracture patients have been transferred directly from the Emergency department to the UOG so that the Orthogeriatric team can evaluate them from the outset to ensure that they are totally prepped for the surgery performed at the HNSG. In other words, the orthogeriatric team currently intervenes in a large number of patients for the entire process: pre-, peri- and postoperative and functional recovery. In addition, in our Unit, care has been extended and completed in order to follow up all patients in a specific Fracture Liaison Service (FLS) consultation, where the risk of a secondary fracture is assessed and the relevant preventive and therapeutic measures are established, with osteoporotic treatment added in many cases.

Since the Unit was created, it was considered essential to have a registry that would facilitate the possibility of knowing different outcomes and of being able to benchmark ourselves over the years. Some years later, the opportunity to join the RNFC emerged, and with it the possibility of comparing and benchmarking ourselves with many other hospitals, which is why we have been part of the RNFC since it was created.

We cannot draw major conclusions on the quality indicators analysed, since in some of them we have always performed above the mean (shorter delay to surgery, more osteoporotic treatment, vitamin D at discharge). In other indicators we are below the mean, such as sitting up in the first 24 hours or independent mobility after 30 days. The other results vary depending on the analysis.

What has the RNFC contributed to our work team? Being part of the RNFC from the outset has made us feel proud to belong to a responsible, professional, hard-working and very generous research group. The voluntary work of different professionals from a large number of Spanish hospitals in order to secure the current RNFC project delivers results that not only allow us to compare ourselves to ourselves as we did at the beginning of our activity, but also to draw comparisons with other hospitals throughout Spain and thus achieve or attempt continuous improvement. We have observed that over these years, thanks to all the reports issued, certificates, and above all the accolades obtained, the RNFC has had a positive influence and has helped the Orthogeriatric Unit to take on a prominent role in the Department, Hospital and Healthcare sector.

The Unit used to have 8 to 10 ring-fenced beds, although it lacked the capacity to admit more patients in the event of full occupancy (they remained in the HRV Traumatology

Department). Thanks to the interest of both of the current management teams, we now have 22 beds distributed between acute Orthogeriatrics and functional recovery beds, whereby the potential capacity has increased significantly.

We gave great importance to reducing delay to surgery, but have been unable to implement this on weekends or during the evening or night shifts. We still experience certain difficulties with early surgeries, particularly in patients on antiplatelet agents and/or anticoagulants due to the conflict between theoretical recommendations and individual patient-specific risks.

We can rate these results as moderately optimistic (although they can be improved), although we suspect that they may become worse this year (2020) due to the extreme situation related to the Covid pandemic in both hospitals.

Hospital Nuestra Señora de Gracia
Zaragoza

EVOLUTION OF ONGOING RESEARCH PROJECTS

¿Evolucionan igual todas las fracturas extracapsulares de cadera? Diferencias entre las fracturas subtrocantéreas y pertrocantéreas. Datos del Registro Español de Fracturas de Cadera. [Do all extracapsular hip fractures evolve in the same way? Differences between subtrochanteric and pertrochanteric fractures. Data from the Spanish National Hip Fracture Registry]

AUTHORS

Hector J Aguado, Pablo Castillón-Bernal, Paula S Ventura-Wichner, Javier Abarca Vegas, Luis García Flórez, Jordi Salvador Carreño, Virginia García-Virto, Clarisa Simón-Pérez, Cristina Ojeda-Thies, Pilar Sáez-López, Juan I. González-Montalvo, María C Cervera-Díaz.

ABSTRACT

Introduction and Objectives:
Although treating subtrochanteric fractures surgically is more difficult, all extracapsular fractures are managed in a similar way and are considered to follow the same clinical course. Hypothesis: Patients with a subtrochanteric fracture present a poorer clinical course and functional outcome than patients with a pertrochanteric fracture.

Patients and methods:
Observational study of data collected prospectively by the Spanish National Hip Fracture Registry from all patients aged 75 years or older with diagnosed extracapsular fracture between January 2017 and June 2019. The data include the variables proposed by the Fragility Fracture Network for a minimum common dataset. The variables were grouped into demographics and pre-fracture, pre-operative and post-operative status and follow-up at 30 days.

Results:
A total of 13,939 patients with extracapsular hip fracture were registered: 12,199 (87.5%) were pertrochanteric fractures and 1,740 (12.5%) were subtrochanteric. Patients with subtrochanteric fractures were significantly younger, with better pre-fracture mobility and more likely to live at home than in a nursing home. Patients with a pertrochanteric fracture had poorer cognitive function on admission. Post-fracture mobility is worse in patients with subtrochanteric fracture and impaired mobility is greater in patients with subtrochanteric fracture. Among the patients who lived at home before the fracture, the patients with subtrochanteric fracture had a higher risk of remaining in a healthcare centre after 30 days: 44.5% versus 38.0% (OR = 46.37, 95%). Mortality during acute hospitalization was higher in the group of patients with subtrochanteric fracture (p = 0.028) (OR = 1.272; 95% CI: 1.026-1.593).

Conclusions:
Subtrochanteric fractures are a different and more serious entity than pertrochanteric fractures, involving greater morbidity and mortality and loss of function. Patients with subtrochanteric fracture are significantly younger, with fewer cognitive alterations, are more likely to have lived at home previously but have a greater risk of being unable to put weight on their legs. They also have a poorer functional prognosis, more reoperations and a higher rate of institutionalisation.

EVOLUTION OF THE WORK

It was submitted to the Osteoporosis International journal and was well rated by the reviewers, although it was rejected on the grounds that the objective of the work did not suit the journal's subject matter; and they felt it should be published in a surgical journal.
It has been submitted to the Geriatrics Gerontology International journal and is currently under review by the editor.

Hip fractures in Spain. Are we on the right track? Statistically significant differences between the treatment of hip fracture between the Autonomous Communities in Spain.

AUTHORS

Pablo Castillón, Jorge H Nuñez, Fátima Mori-Gammarra, Cristina Ojeda-Thies, Pilar Sáez-López, Juan I Gonzalez Montalvo.

ABSTRACT

Objective:
To analyse the demographic, clinical, surgical and functional data of the Spanish National Hip Fracture National Registry (RNFC) during hospitalization and at one-month follow-up by Autonomous Communities.

Materials and methods:
Cross-sectional analysis in the framework of an RNFC cohort, from January 2017 to May 2018, including 15 Autonomous Communities from Spain with a one-month follow-up. Sociodemographic, clinical, surgical and outcome variables were analysed.

Results:
The sample size was 13,839 patients. There were statistically significant differences ($p < 0.001$) in mean delay to surgery and the percentage of patients who underwent surgery in the first 48 hours. The mean delay to surgery was 70.75 hours, with a 12-hour difference between the Communities of Madrid (71.22) and Catalonia (59.65), the Autonomous Communities that provided most data to the RNFC during the period analysed. Only 43% of the patients underwent surgery in the first 48 hours after admission. Overall, most patients in Spain received spinal anaesthesia (91.9%); however, there were statistically significant differences between Autonomous Communities ($p = 0.0001$).
There were also statistically significant differences in the hospital stay, early postoperative mobilisation, destination at discharge and mortality spinal anaesthesia variables ($p < 0.001$). Mortality 30 days after surgery was 7.8% and was highest in the Basque Country (12.5%)

Conclusions:
The sociodemographic variables, fracture type, type of treatment, and ASA anaesthesia risk were homogeneous throughout Spain. Both geriatricians and internists are fully involved in the hip fracture care process in practically all the hospitals participating in the RNFC. There were significant differences in hip fracture management between the different Autonomous Communities in Spain, particularly in the delay variables.

EVOLUTION OF THE WORK

The text was drafted in accordance with the publication guidelines of the Osteoporosis International scientific journal.
It was submitted to Arch Osteoporos on the advice of Osteoporos International and was recently accepted for publication.

Mejorando la atención de la fractura de cadera en España: Evolución de los Indicadores de Calidad en el Registro Nacional de Fractura de Cadera. [Improving hip fracture care in Spain: Evolution of Quality Indicators in the Spanish National Hip Fracture Registry]

AUTHORS

Patricia Ysabel Condorhuamán Alvarado, Teresa Pareja Sierra, Angélica Muñoz Pascual, Pilar Sáez López, Cristina Ojeda Thies, Teresa Alarcón Alarcón, María Concepción Cassinello Ogea, Jose Luis Pérez Castrillón, Paloma Gómez Campelo, Laura Navarro Castellanos, Ángel Otero Puime, Juan Ignacio González-Montalvo, representing the participants of the Spanish National Hip Fracture Registry.

ABSTRACT

Objective:
To learn how the RNFC's quality indicators (QIs) have evolved since the quality recommendations were issued in each one of the participating hospitals.

Method:
A prospective, descriptive, observational, multicentre and comparative cohort study before and after an intervention in the hospitals participating in the RNFC. Study population: all the hospitals participating in the RNFC that registered cases between January and May 2017 and continued to register cases from January to December 2019. Based on the hospitals from 2017, seven QIs were chosen and a quality standard (QS) was proposed as the objective to be achieved by the participating centres. An intervention was carried out consisting of the distribution of a proposal of 25 recommendations with practical and concrete measures for achieving them based on the available clinical practice guidelines, through a document in a newsletter (31 August and 8 October 2018), a manuscript publication in the REGG and the distribution of printed cards. Compliance with each QI (expressed as a percentage) was evaluated before and after the intervention.

Results:
Forty-three hospitals registered 2,674 cases from January to May 2017 and 8,037 during 2019. The chosen QIs, the proposed QS and evolution in the degree of compliance were: 1) The percentage of patients operated in less than 48 hours (QS: 63%) increased from 38.9% to 45.8% (p <0.001). 2) The percentage of patients mobilised on the first day post-operative (QS: 86%) increased from 58.9% to 70.3% (p <0.001). 3) The percentage of patients to whom antiosteoporotic treatment was prescribed at discharge (QS: 61%) increased from 34.5% to 49.8% (p <0.001). 4) The percentage of patients with calcium supplementation at discharge (QS: 77%) increased from 48.7% to 62.8% (p <0.001). 5) The percentage of patients with vitamin D supplementation at discharge (QS: 92%) increased from 71.5% to 84.7% (p <0.001). 6) The percentage of patients who developed a grade 2 or higher in-hospital pressure ulcer (QS: 2.1%) decreased from 6.5% to 5% (p 0.004). 7) The percentage of patients with independent mobility at 30 days (QS: 70%) decreased from 58.8% to 56.4% (p <0.05).

Conclusions:
From 2017 to 2019, with the exception of independent mobility at 30 days, all the quality indicators improved following the distribution of the recommendations, indicating a trend towards reaching the proposed standard. The recommendations to achieve the QS for each QI could contribute to improving the quality of care in the RNFC.

EVOLUTION OF THE WORK

Data analysed and in the writing phase for publication.

Diferencias en las características basales, manejo y resultado de los pacientes con fractura de cadera según el lugar de residencia habitual. Cohorte del Registro Nacional de Fractura de Cadera de España. [Differences in the baseline characteristics, management and outcome of patients with hip fracture according to the usual place of residence. Cohort of the Spanish National Hip Fracture Registry]

AUTHORS

Ríos-Germán, Peggy P. (MD), Gutierrez-Misis, Alicia (PhD), Queipo, Rocío (M.Ed), Ojeda-Thies, Cristina (PhD), Sáez-López, Pilar (PhD), Alarcón, Teresa (PhD), Otero Puime, Angel (PhD), Gómez-Campelo, Paloma (PSY), Navarro-Castellanos, Laura (BS), González-Montalvo, Juan Ignacio (PhD), on behalf of the participants of the Spanish National Hip Fracture Registry (RNFC).

ABSTRACT

Introduction:
One in every four hip fractures comes from Nursing Homes. The objective of the study was to compare baseline characteristics, during hospitalization and one month afterwards, of institutionalised patients and patients from the community.

Method:
The data from a cohort of older adults hospitalised with hip fracture in 75 Spanish hospitals, collected prospectively in the Spanish National Hip Fracture Registry between 2016 and 2018, were analysed and classified according to their usual place of residence: community or nursing home. Demographic data were collected at admission, as well as data related to hospital evolution and discharge to Functional Recovery Units. Patients or relatives were contacted one month later to ascertain their location and functional status.

Results:
Of 18,262 patients, 4,422 (24.2%) came from nursing homes. People who came from nursing homes were older (mean age: 89 vs. 86 years, p <0.001), had higher rates of impaired gait (they could not walk independently: 20.8% vs. 9.4 % p <0.001) and cognitive impairment (Pfeiffer's SPMSQ >3, 75.3% vs. 34.8%, p <0.001). These people were more likely to receive conservative treatment (5.4% vs. 2.0%, p <0.001) and were less likely to be mobilised early (61.4% vs. 64.1%, p <0.001). At discharge, they received fewer vitamin D supplements (68.5% vs. 72.4%, p <0.001), less antiosteoporotic medication (29.3% vs. 44.3% p <0.001) and were referred less frequently to Functional Recovery Units (5.4% vs. 27.5%, p <0.001). One month after the hip fracture, 45% of the people who came from nursing homes and 28% of the people from the community had severe gait impairment (p <0.001).

Conclusions:
People in nursing homes present greater physical and mental impairment than people in the community and are treated differently both during hospitalization and at discharge. After a month, they present a disproportionate gait impairment compared to patients admitted from the community.

SUBPROJECT EVOLUTION:

The article has been submitted to the European Geriatric Medicine journal.
The data have been presented in poster format at two conferences, the European Congress of Geriatrics in 2019 and the Orthogeriatric Course at the Hospital Universitario La Paz in 2019:

• Ríos Germán, PP. Pacientes de residencias: grupo (de personas con Fractura de Cadera) con características propias. [Nursing home patients: group (of people with Hip Fracture) with their own characteristics] XI Orthogeriatrics Course. Hospital Universitario La Paz. Madrid. Spain. 15 November 2019.

• Ríos-Germán P, Queipo R, Ramírez-Martín R, et al. Differences at baseline and during hospitalization among hip fracture patients hospitalised from nursing homes vs. community dwelling. Analysis of 19,000 patients from the Spanish National Hip Fracture Registry (SNHFR). Eur Geriatr Med. 2019;10(Suppl 1):S34.

• Ríos-Germán P, Queipo R, Ramírez-Martín R, et al. Clinical and functional differences at 30-days follow-up for nursing home and community dwelling hip fracture patients: analysis of 19,000 patients from the Spanish National Hip Fracture Registry (SNHFR). Eur Geriatr Med. 2019;10(Suppl1):S207.

Influencia del deterioro cognitivo en la evolución de los pacientes del RNFC. [Influence of cognitive impairment on the evolution of RNFC patients]

AUTHORS

Jesús Mora Fernández, Elena Romero Pisonero and Cristina Fernández Pérez.

ABSTRACT

Objectives:
1) To describe the characteristics of hip fracture patients of the RNFC in relation to the degree of baseline cognitive impairment (CI) 2) To determine post-surgical clinical and functional outcomes and the use of resources at discharge based on place of origin and previous functionality.

Method:
Retrospective observational study of patients >75 years included in the RNFC from January 2017 to December 2018. Clinical, functional and social data were recorded at admission and 30 days after discharge. Cognitive level was evaluated with the Pfeiffer scale when it could be obtained and by means of informed consent. Normal cognition was considered <3 errors, and the presence of mild, moderate and severe cognitive impairment was estimated when the test result was 3 to 4, 5 to 7 and 8 to 10 errors, respectively. On a functional level, the ability to walk was defined according to the RNFC scale as good or autonomous mobility <7 out of 10 (able to move independently at least in the home with technical aids). Statistical analysis: A descriptive analysis of the quantitative and qualitative variables was performed to determine a relationship between baseline data and cognitive status. To this end, Student's t or Chi square tests, respectively, were used. Similarly, the presence of cognitive impairment was compared in relation to clinical outcomes, location at discharge and mobility during follow-up. A logistic regression model was applied to determine the independent association of the significant variables with cognitive impairment. A level of statistical significance with a 95% confidence interval (p <0.05) was considered. SPSS 23.0.

Results:
A sample of 21,254 patients was obtained during the study period with a mean age of 86.7 years (SD 5.5; 75-108); 75.5% women. Previously institutionalised: 24.1%. 82.8% were able to walk independently with/without technical aids. Comorbidity: ASA 3-4: 71.8%. Surgery was performed: 97.3%. The Pfeiffer scale was obtained in 17,240 patients (81.1% of the sample). A normal cognitive status (Pfeiffer <3 errors) was observed in 47.5% (n 8,190); 15.7% presented 3-4 errors, 16.6% 5-7 errors and 20.9% 8-10 errors. CI was associated with age (87.7 vs 85.3 years), female sex (78.2% vs 72.9%), previous institutionalisation (35.3% vs 9.6%), less previous ability to walk independently (74.0% vs 95.5%) and ASA scale 3-5 (77.8% vs 63.5%), all with p <0.001. These results maintained statistical significance in the logistic regression analysis. In addition, a higher CI was related to less early postoperative mobilisation and the use of antiosteoporotic treatment at discharge, greater emergence of pressure ulcers, less recovery of mobility, greater institutionalisation rate at 30 days and mortality (p <0.001). In the multivariate analysis, institutionalisation was the most frequent location for patients with CI at 30 days if they had previously walked better. Referral to Rehabilitation Units was more frequent in patients with CI who lived at home with greater previous dependence for walking (p <0.001). The tables attached present the relationship observed between the baseline cognitive status in greater detail according to Pfeiffer and the different demographic, clinical, healthcare and follow-up variables.

Conclusions: CI, and it is more frequent in female, older patients and those with greater comorbidity (ASA), worse previous mobility and living in nursing homes. They presented worse postsurgical outcomes, onset of ulcers, less early postoperative mobilization and resultingautonomy, greater risk of going to a nursing home on discharge and in hospital and 30 day mortality. The use of healthcare resources 30 days after the fracture varied depending on their location prior to the fracture and their previous funtional status.

Patient characteristics (Chi square test)

	n: 8,190 Pfeiffer 1-2	*n: 9,050 Pfeiffer >2*	*p*
Women (%)	*72.9*	*78.2*	*<0.001*
Previous institucionalization (%)	*9.6*	*35.3*	*<0.001*
Good mobility: autonomous <7 (%)	*95.5*	*74.0*	*<0.001*
Comorbidity: ASA 3-5 (%)	*63.5*	*77.8*	*<0.001*

Patient characteristics (Student's t test)

	n: 8,190 Pfeiffer 1-2	*n: 9,050 Pfeiffer >2*	
Mean age (years)	*85.3 (SD 5.5)*	*87.7 (SD 5.4)*	*<0.001*
Mean delay to surgery (hours)	*69.0 (SD 59.1)*	*70.8 (SD 64.2)*	*0.062 (0.207) **
Mean hospital stay (days)	*10.4 (SD 6.2)*	*10.4 (SD 6.7)*	*0.720*

** Mann-Whitney U Test*

Results after surgery (Chi square test)

	n: 8,190 Pfeiffer 1-2	n: 9,050 Pfeiffer >2	p
Peripheral block (%)	19.9	16.3	<0.001
In-hospital pressure ulcer (%)	4.0	7.7	<0.001
Early mobilisation after intervention (%)	68.9	57.5	<0.001
Loss of mobility at 30 days (%)	24.9	54.4	<0.001
OP treatment at discharge (%)	48.9	37.9	<0.001
OP treatment after 30 days (%)	52.6	38.9	<0.001
Institutionalization at discharge (%)	20.0	42.4	<0.001
Institutionalization at 30 days (%)	21.6	47.4	<0.001
In-hospital mortality (%)	2.7	5.2	<0.001
Mortality at 30 days (%)	4.6	9.5	<0.001

EVOLUTION OF THE WORK

• Initial results presented on 27 February 2020 at the II Biennial Interdisciplinary Course on Orthogeriatrics and Traumatology of the Hospital Clínico San Carlos. In the talk titled "Deterioro cognitivo. Un hándicap para la rehabilitación" [Cognitive Impairment. A handicap for rehabilitation].

• International poster accepted at the FFN Global Congress Greece for 14-16 March 2020 (postponed due to the Covid-19 pandemic) with the title "Cognitive impairment as a core factor in hip fracture outcome: the Spanish RNFC experience ".

• Assessment of possible lines of study for writing a paper:

o Specific study on mild CI (Pfeiffer <3), addressing the term cognitive frailty.
o Results in a subsample of previously institutionalised patients with or without CI
o Description of the functional status of patients with a higher degree of baseline cognitive impairment (Pfeiffer >7)

Mortalidad a 30 días tras fractura de cadera. [30-day mortality after hip fracture]

AUTHORS

Javier Sanz Reig, Jesús Más Martínez.

ABSTRACT

Objectives:
- To identify the characteristics of patients over 75 years with a hip fracture who die within 30 days after the fracture
- Influence of the type of hip fracture on 30-day mortality
- Delay to surgery and 30-day mortality after hip fracture
- To design a predictive scale for 30-day mortality after hip fracture
- To predict the mortality rate during the next decade

Method:
Observational multicentre cohort study of a prospective Spanish National Hip Fracture Registry database of patients over 75 years between 2017 and 2019. The demographic, patient's home, level of ambulation, mental status, delay to surgery, early mobilisation and readmission after 30 days variables were recorded.

Results (Objective A):
28,829 fractures were included in the study. The 30-day mortality was 8.1% (2,321 patients). The patients who died were older than those who survived (89.1 vs 86.5 years, p <0.001), they came more frequently from a nursing home (31.3% vs 23.1%, p <0.001), went out less before the fracture (69.4% vs. 48.9%, p <0.001), had greater previous cognitive impairment (78% vs. 59.8%, p < 0.001), longer delay to surgery (80.6 hours versus 67.5, p <0.001), lower percentage of early mobilisation (42.8% versus 31.6%, p <0.001), greater development of pressure ulcers during hospitalization (9.9% versus 5.2%, p <0.001), and a higher percentage of hospital readmission (5.6% versus 3.5%, p <0.001).

Results (Objective B):
28,459 fractures were included in the study. By type of fracture, 14,842 (52.1%) were pertrochanteric, 8,365 (29.3%) displaced subcapital, 2,919 (10.2%) non-displaced subcapital and 2,333 subtrochanteric (8.4%). There were significant differences according to the type of fracture with regard to age, pre-fracture place of residence, level of pre-fracture mobility, mental status, ASA grade, delay to surgery, hospital stay and hospital readmission at 30 days. 30-day mortality was 8.0% (2,282 patients). Mortality was higher for subtrochanteric fractures (213 patients, 9.1%), followed by pertrochanteric fractures (1,202 patients, 8.0%), displaced subcapital fracture (648 patients, 7.7%), and non-displaced subcapital fractures (219 patients, 7.5%). The differences were not significant (p = 0.115).

EVOLUTION OF THE WORK

The work is in the analysis phase.
The results corresponding to subproject objective A have been obtained. It was submitted as a Communication to the 2020 SECOT Online Conference, where it was accepted for presentation.
The results corresponding to subproject objective B were obtained to be submitted as a Communication to the Conference of the Sociedad Valenciana de Cirugía Ortopédica y Traumatología, which was suspended due to the coronavirus pandemic. The initial intention is to submit it to the 2021 conference.
The data analysis is still pending in order to complete subproject objectives C, D and E.
The study has not been submitted to any journal for evaluation by the Editorial Committee.
The project has been submitted to apply for a grant from the Fundación Mapfre.

Grado de representatividad del Registro Nacional de Fractura de Cadera y comparación de resultados del RNFC y del CMBD. [Degree of Representativeness of the Spanish National Hip Fracture Registry and Comparison of Results from the RNFC and the CMBD]

AUTHORS

Ángel Otero, Alicia Gutiérrez, Daniel Toledo.

ABSTRACT

Objectives:
To analyse whether the RNFC is a representative sample of the population as a whole of people aged 75 and over admitted to Spanish hospitals for hip fracture and to compare the healthcare outcomes for these patients with the results of the Conjunto Mínimo Básico de Datos [Minimum Basic Data Set] (CMBD).

Method:
To ascertain the degree of representativeness of the RNFC, the "gold standard", the Conjunto Mínimo Básico de Datos (CMBD), was used. The latest CMBD records accessible in February 2020 were from the years 2017 and 2018. Therefore, for this study all the RNFC records of patients discharged in those two years (21,686) were chosen.
Given the peculiarities of the RNFC, the records of patients aged 75 or over with hip fracture were selected. Patients hospitalised due to traffic accidents were excluded. The records of the patients who were readmitted in the first 30 days were merged into the first admission record and the records of the same patient who was transferred to another hospital in the first 48 hours to continue treatment were also merged into one, including the date of the first admission and the discharge date from the second hospital. The number of CMBD records that met these criteria was 87,432.

Variables and Cases excluded:
The common variables of the RNFC and the CMBD were used: a) Patient variables: Sex, Age, Type and Side of the fracture. b) Process variables and care outcome: Days of Stay, Patients without surgery, Delay to surgery, Surgical procedure and Vital status at discharge. c) Variables associated with the care location: Autonomous Community and Type of Hospital where the patient was admitted, grouped into four categories according to the number of cases seen in the study period.
Records in which sex and/or age did not appear, those with type of fracture as “other” or “no data”, records with inconsistent data pertaining to intervention and surgical procedure (yes/no) and records with a delay to surgery greater than total stay were excluded. The cases excluded accounted for 5.0% of the CMBD and 2.6% of the RNFC. The final number of records included in the analysis was 104,240 (83,110 from the CMBD and 21,130 from the RNFC).

Statistical analysis:
To assess the representativeness and the outcomes of the process, the frequencies of the categorical variables were compared using percentages of the different categories (Chi2 test) and the 95% confidence intervals (95%CI) were calculated. For continuous variables with normal and non-normal distribution, means or medians were compared using Student's t or Mann-Whitney test, respectively. Crude data comparisons and analyses stratified by type of hospital and by Autonomous Communities were carried out.

Results:

The 2017-18 RNFC collected 25% of the CMBD records (24.8% - 25.4%).
Of the patient-related variables, the distribution by age or sex of the patients registered in the CMBD and in the RNFC does not present significant differences (86.64 ± 5.67 years in the CMBD and 86.69 ± 5.59 years in the RNFC; p = 0.295) and 75.1% and 75.7% of women p = 0.088). A similar result is obtained when the distribution by age groups (3 categories) and sex expressed in % with 95%CI is studied. Neither did fracture side and type (when head and neck fractures are grouped with pertrochanteric fractures in the same category in a dichotomous variable) show significant differences between both records.
Regarding the process-related variables, the differences between the RNFC and CMBD are statistically significant in all the variables studied (p <0.001). Stay and delay to surgery do not seem to present clinically remarkable differences, since the differences in the medians for both variables are 4.8 and 2.4 hours, respectively.
The proportion of CMBD patients who did not undergo surgery is 86% higher than in RNFC (8.2% and 4.4%). The number of total hip replacements registered in the CMBD more than triples the proportion registered in the RNFC (9.7% and 2.6%), although when both types of replacement are added (Total or Partial), the proportion out of the total number of surgically treated patients is similar in both registries (37.6% and 37.2%, respectively). The proportion of deaths during hospitalization of patients aged 75 and over with hip fracture is 31% higher in the CMBD registry than in the RNFC (5.9% and 4.5%, respectively).
These significant differences between both registries are maintained when the stratified analysis is performed by Autonomous Community and hospital type, grouped by the number of cases seen.
In turn, Autonomous Community and hospital type are, in themselves, variables associated with the different outcomes obtained in the proportion of patients not operated, delay to surgery and proportion of deaths during hospitalization in each one of the registries, both in the CMBD and in the RNFC (there is intra-registry variability associated with the place of care, Autonomous Community and Hospital Type for these process and outcome variables).

Conclusion:

The similarity of results in the by-age and by-sex distribution of the patients registered in both registries over two years, as well as the similar proportion of subtrochanteric fractures in the dichotomous classification of the fracture type and side, supports the hypothesis that the RNFC sample is representative of all the patients with hip fracture treated in Spain.
The differences found between CMBD and RNFC in the process or outcome, such as the proportion of patients not treated surgically or patients who died while hospitalised, present an important statistical and clinical significance.
One plausible explanation, which will need to be analysed in greater detail and depth, is that these differences can be used as indicators of quality of care. The voluntary nature of the RNFC and the direct involvement of the professionals directly responsible for treating these patients in their respective hospitals, collecting the data for the registry, as well as their explicit commitment to an instrument intended to improve the quality of care and the periodic distribution of RNFC data, would be consistent with these differences that are favourable to better quality indicators in the RNFC subsample compared to the entire population attended to in Spain, as represented by the CMBD.

EVOLUTION OF THE WORK

This work is in the writing phase for submission to an international journal.

Utilidad de un Registro Nacional de Fractura de Cadera para conocer el perfil de los pacientes a los que se prescribe tratamiento antiosteoporotico tras el alta hospitalaria. [Utility of a National Hip Fracture Registry to establish the profile of patients to whom antiosteoporotic treatment is prescribed after hospital discharge]

AUTHORS

Teresa Alarcón, Cristina Ojeda-Thies, Pilar Sáez-López, Paloma Gómez-Campelo, Laura Navarro-Castellanos, Angel Otero-Puime, Juan Ignacio González-Montalvo.

ABSTRACT

Objectives:
National Registries of hip fracture patients are a useful instrument for ascertaining how this process actually stands in healthcare. The study objectives were: first, to ascertain how frequently antiosteoporotic treatment is prescribed at discharge to patients hospitalised for hip fracture in the hospitals that participate in the Spanish National Hip Fracture Registry (RNFC). Second, to compare the differences between treated and untreated patients. Third, to analyse the characteristics of the patients associated with antiosteoporotic treatment prescription at discharge; and fourth, to evaluate these differences in patient profile at discharge from hospitals with a high and low frequency of prescription.

Method:
Patients discharged for fragility fracture in 2017 participating in the RNFC were included. The differences in demographics, functional and cognitive status, pre-fracture osteoporotic treatment, fracture type, surgical risk and volume of cases seen in each hospital and prescription of antiosteoporotic treatment at discharge were analysed. We assessed the cluster effect associated with the hospitals participating in the registry using the mixed effects model, Multilevel Logistic Regression and adjusting for “Generalised Estimating Equations”.

Results:
6,701 patients from 54 hospitals were included. Antiosteoportic treatment was prescribed at discharge in 36.5% (95%CI 35.8-37.2%), with great variability between centres (range: 0-94%). The intraclass correlation (ICC) due to the cluster effect associated with the hospitals was high (47.9%). Antiosteoporotic treatment was more frequently prescribed in younger patients, who lived at home, had previously taken treatment for osteoporosis, had a better functional and cognitive status, had a low surgical risk and were discharged from hospitals with a higher volume of patients, all of them with p <0.001. These differences remained similar when hospitals with low and high prescription rates were compared separately.
Conclusions: There is a wide clinical variability in the prescription of antiosteoporotic treatment after hip fracture between different hospitals. It is more common to start treatment in patients with a better clinical and functional status and a better cognitive status and in those who are discharged from hospitals with a large volume of patients.

CURRENT STATUS OF THE WORK

Published in the Osteoporosis International journal.

Evaluación de la pérdida funcional al mes y de los factores relacionados tras sufrir una fractura de cadera. [Evaluation of functional loss after one month and related factors after suffering a hip fracture]

AUTHORS

Cristina González de Villaumbrosia, Pilar Sáez López, Ana Isabel Hormigo, Manuel Mejía, Juan Ignacio González Montalvo, Jesús Mora, Nuria Montero, Rocio Queipo, Angel Otero Puime, Angélica Muñoz Pascual, Teresa Alarcón, Teresa Pareja, Cristina Ojeda, Paloma Gomez Campelo, Francisco José Tarazona Santabalbina, Ricardo Larrainzar, Rosario López, Laura Navarro.

ABSTRACT

The aim of this study is to ascertain functional evolution and the related factors (the patient, mode of care and in-hospital clinical course) that influence short-term (one month) functional recovery after a hip fracture.
Knowing the modifiable factors may help these patients to regain their independence.
This is a prospective observational study in which 16,633 RNFC patients were enrolled between 2017 and 2018.
Regarding functional evolution 30 days after the fracture, 6,781 patients (40.8%) achieved a complete recovery.
There is a high presence of impaired ambulation at one month, meaning that 4,095 patients (24.6%) had mild functional impairment, 3,269 (19.7%) moderate and 2,488 (15%) severe.
The statistically significantly factors associated with greater impaired ambulation, adjusted for the other variables, were age, previous functional dependence (FAC 1), comorbidity (ASA), coming from a nursing home, presenting cognitive impairment, having an extracapsular fracture, developing a pressure ulcer during hospitalization, hospital stay and readmissions in the first month. In contrast, the statistically significantly factors associated with less functional impairment, adjusted for the other variables, were undergoing surgery, peripheral nerve block, early sitting up in the 24 hours postoperative and the prescription of an osteoprotective drug at one month.
The study provides guidance on the modifiable factors upon which we could act to improve functional outcomes. Early surgery, early patient mobilisation and rehabilitation should help to prevent pressure ulcers and begin to walk again.
Appropriate surgery and orthogeriatric collaboration have been shown, in other studies, to reduce complications and hospital stay and should prevent readmissions while also promoting functional recovery.
It is essential to evaluate the risk of falls and osteoporosis that contribute to new fractures correctly, offering preventive and therapeutic measures adapted to the patient's profile.
It is not possible to act upon non-modifiable risk factors such as age, previous functional and cognitive impairment, nursing home origin or high ASA risk, although awareness of this greater risk is important in predicting functional prognosis.
The network of hospitals that participate in the RNFC is a very useful tool for studying, analysing and exchanging knowledge and raising awareness of areas for improvement, including the aforementioned measures that can improve functional recovery.

ANNUAL REPORT 2019
11 Research projects

EVOLUTION OF THE WORK

The project progressed throughout 2019 and was concluded at the end of the year, when the report with the results for the Primitivo de Vega grant, awarded by the Fundación Mapfre, was produced. In 2020, the project was expanded to create, on the basis of the prognostic factors detected in the study, a prognostic model based on a logistic regression that makes it possible to predict each individual patient's likelihood of regaining their previous gait.

This new version and extension of the project has been submitted and a decision by the editor of the International Journal of Environmental Research and Public Health is pending.

This work will be part of the thesis of Dr Cristina González de Villaumbrosia.

Centenarios y otros grupos de edad mayores de 75 años con fractura de cadera. [Centenarians and other over-75 age groups with hip fracture]

AUTHORS

Bermejo Boixareu C, Guijarro Valtueña A, Cedeño Veloz AB, Gonzalo Lázaro G, Navarro Castellanos L, Sáez López P, Queipo Matas R, Ojeda-Thies C, P. Gómez Campelo P, Royuela Vicente A, González-Montalvo JI.

ABSTRACT

Introduction and Objectives:
Fragility fractures can have different clinical characteristics with ageing. Centenarians and nonagenarians are population groups that have grown rapidly in recent years.
The objective of this study is to evaluate the main clinical characteristics of centenarians and over-75s with a fragility hip fracture.

Patients and methods:
The Spanish National Hip Fracture Registry is a multicentre registry that includes 84 hospitals in Spain and collects data prospectively.
The patients were divided into four groups: from 75 to 79 years old, octogenarians, nonagenarians and centenarians.
The analysis included the variables registered from January 2017 to June 2019, with demographics, clinical, cognitive, functional, social characteristics, hospital stay and mortality.

Results:
The study included 25,938 patients: 2,888 patients were 75-79 years old, 14,762 were octogenarians, 8,035 were nonagenarians and 253 were centenarians. The percentage of women (70.38% vs 75.64% vs 77.49% vs 83.33%), of institutionalised patients (12.23% vs 21.31% vs 31.8 vs 35.97%), of patients with a severe degree of functional dependence (3.56% vs 4.35 vs 6.49 vs 8.87%) and advanced dementia (11.23% vs 18.66% vs 25.43% vs 32.81%) increased with age. Intracapsular fractures decreased with age (43.62% vs 40.33% vs 36.24% vs 31.6%). Centenarians underwent surgery in less than 48 hours more frequently than younger patients (46.18% vs 44.50% vs 45.81% vs 52.84%) and hospital stay was also shorter in this population group (8.7 days vs 8.9 vs 9 vs 8.5). Institutionalisation at discharge increased with age (19.79% vs 30.03 vs 38.70% vs 42.29%), although referral for rehabilitation treatment at discharge was lower in centenarians (19.48% vs 22.18% vs 19.64% vs 11.86%), as was osteoprotective treatment (48.25% vs 43.36% vs 31.85 vs 14.10%). Mortality at one month increased with age (3.41% vs 6.45% vs 11.51% vs 20.16%).

Conclusions:
This descriptive analysis shows that there are differences in the evolution of elderly patients with fragility hip fractures according to age range. These results point to the need to improve care and prevent age-related complications.

EVOLUTION OF THE WORK

The article is written and is pending review by the authors and subsequent submission for publication.

Estudio de variabilidad clínica del proceso de atención a la fractura de cadera por fragilidad: Resultados del RNFC. [Study of clinical variability of the care process for fragility-related hip fracture: Results from the RNFC]

AUTHORS

Paloma Gómez Campelo, Juan Ignacio González Montalvo, Enrique Gil Garay, Jesús Mora Fernández, Ricardo Larrainzar Garijo, Nuria Pilar Montero Fernández, María Teresa Alarcón Alarcón, María Concepción Cassinello Ogea, Pilar Sáez López, Cristina Ojeda Thies, Ángel Otero Puime, María del Rosario López Giménez, Francisco José Tarazona Santabalbina, José Manuel Cancio Trujillo, Enric Duaso Magaña, Teresa Pareja Sierra, María Pilar Mesa Lampre, Angélica Muñoz Pascual.

ABSTRACT

The general objective of this study is to quantify and analyse the clinical variability of care for fragility Hip Fractures in Spain and to implement and evaluate a specific programme to improve the quality of care to reduce this variability and improve these patients' health outcomes.

The specific objectives of the study are:

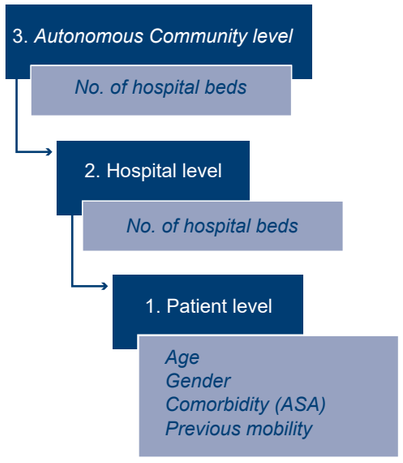
- To quantify and analyse clinical variability in the care of patients with Hip Fracture (HF) between the different hospitals in Spain and the associated factors that account for it following adjustment for the different covariables involved in this variability.

In this objective, the following factors were selected to evaluate the clinical variability of the care process:
- Delay to surgery
- Mortality (after 30 days)
- Functional loss (after 30 days)
- Osteoprotective treatment (at discharge)

- To quantify and analyze variability in the health outcomes obtained in treating patients with Hip Fracture (HF) between the different hospitals in Spain and the associated factors that account for it following adjustment for the different covariables involved in this variability.

In this objective, we specified the following factors to evaluate the variability of the outcomes:
- Delay to surgery
- Early sitting up (the day after surgery)

For the variability analysis, three levels were selected for consideration in the multilevel analysis: Autonomous Community, Hospital and Patient.



To answer the variability objectives, we selected patients included in the Spanish National Hip Fracture Registry in 2017, i.e. from 01/01/2017 until 31/12/2017. This yielded a sample of 9,422 patients from a total of 53 hospitals.

The preliminary conclusions of the multilevel analysis are:
-The patient variables that have the greatest influence in explaining the selected variables are:
• Age
• Gender
• Cognitive impairment
• Preoperative physical status
-Variability due to Autonomous Community would appear to be a variable that warrants further examination.
The next step will be to validate the models obtained with the rest of the patients in the cohort and to explore variability due to the Autonomous Community further.

EVOLUTION OF THE WORK

Part of the project is in the writing phase for publication.

Análisis de la Mortalidad en los pacientes del Registro Nacional de Fracturas de Cadera (RNFC). [Analysis of Mortality in patients from the Spanish National Hip Fracture Registry (RNFC)]

AUTHORS

Laura Navarro Castellanos, Mª del Rosario Cintas del Río.

ABSTRACT

Objectives:
The main objective is to analyse mortality in patients of the Spanish National Registry of Hip Fractures in Spain from hospitalization through to follow-up at 30 days.

The secondary objectives are:
To ascertain the main characteristics of patients hospitalised for hip fracture and the number of total deaths at 30 days after a hip fracture, study the possible factors influencing the 30-day mortality of patients hospitalised with a hip fracture, evaluate and compare the models constructed to find the best fit that describes the relationship between 30-day mortality and a group of explanatory variables and identify profiles of patients hospitalised with hip fracture considering 30-day mortality as an endpoint.

Study population:
Data from 1 January 2017 through to 30 September 2018, yielding a total of 16,722 patients from 74 hospitals.

Methods:
Prospective analytical observational prognostic study with data collection in two phases: the hospital phase and the post-hospital phase (carried out one month after the fracture).

Results:
Hip fracture is more common in females than males, 75.7% versus 24.2%. Patient age is between 75 and 108 years, with mean of almost 87 years; the most common age of patients who suffer a hip fracture is between 85 and 94 years. There is not a great deal of difference in fracture side, although in fracture type, pertrochanteric fractures predominate, with 52.1%. 75.5% of the patients live at home, 82.9% have independent mobility inside and/or outside the home, 46.7% have an intact Pfeiffer and 71.6% have a serious disease that constitutes a high anaesthetic risk (ASA >2). 97.3% of the patients undergo surgery, 44% of them in less than 48 hours, 6.3% have pressure ulcers and 61.2% sat up the first day after surgery. Approximately 8% of patients die within 30 days.
By constructing different logistic regression models with the most relevant variables from the database we identified factors influencing 30-day mortality: sex, age, pre-fracture mobility, cognitive impairment (Pfeiffer), functional status (ASA), surgery performed, osteoprotective treatment at discharge and the presence of pressure ulcers. Of these factors, sex, age and surgery had the greatest bearing.

In general, being male and elderly (older than 94 years) increases the percentage of deaths compared to the rest of the categories of both variables.
The highest percentage of deaths (23.9%) occurs in the segment of patients with reduced mobility before the fracture (Mobility in the home with the assistance of others or non-mobility) and in people who are older (over 94 years). Within this group, in the 85 to 94 year age range, sex appears to be a differentiating factor, so that the percentage of deaths decreases somewhat for men (23.5%), with women with the same characteristics accounting for a significantly lower percentage of deaths (13.2%).
The lower percentage of deaths (1.3%) corresponds to a patient profile with independent mobility inside and/or outside the home before the fracture, with better functional status (ASA I II, healthy individual or mild disease) and aged between 75 and 84 years (the youngest group).

EVOLUTION OF THE WORK

Submitted on 9 October 2020 to the Master's in Biostatistics panel of the Universidad Complutense de Madrid, receiving a grade of 7.2.

LIST OF PUBLICATIONS BY THE RNFC WORKING GROUP

Articles related to the RNFC

Sáez-López P, Brañas F, Sánchez-Hernández N, Alonso-García N, González-Montalvo JI. Hip fracture registries: utility, description, and comparison. Osteoporosis International 2017; 28(4):1157-1166

- Muñoz-Pascual A, Sáez-López P, Jiménez-Mola S, Sánchez-Hernández N, AlonsoGarcía N, Andrés-Sainz A et al. Ortogeriatría: Primer registro multicéntrico autonómico de Fracturas de Cadera en Castilla y León (España). [Orthogeriatrics: First Autonomous Multicentre Registry of Hip Fractures in Castile and Leon (Spain)] Rev Esp Geriatr Gerontol 2017, 52: 242-8.

- Molina Hernández MJ, González de Villaumbrosia C, Martín de Francisco de Murga E, Alarcón Alarcón T, Montero-Fernández N, Illán J et al. Registro de fracturas de cadera multicéntrico de unidades de Ortogeriatría de la Comunidad Autónoma de Madrid. [Multicentre registry of hip fractures from Orthogeriatric units in the Autonomous Community of Madrid] Rev Esp Geriatr Gerontol 2019;54(1):5-11.

- Sáez-López P, González-Montalvo JI, Ojeda-Thies C, Mora-Fernández J, Muñoz-Pascual A, Cancio JM, Tarazona FJ et al. Spanish National Hip Fracture Registry (SNHFR): a description of its objectives, methodology and implementation. Rev Esp Geriatr Gerontol 2018; 53: 188-95.

- Condorhuamán-Alvarado PY, Pareja-Sierra T, Muñoz-Pascual A, Sáez-López P, OjedaThies C, Alarcón-Alarcón T, Cassinello-Ogea MC, Pérez-Castrillón JL, Gómez-Campelo P, Navarro-Castellanos L, Otero-Puime Á, González-Montalvo JI. First proposal of quality indicators and standards and recommendations to improve the healthcare in the Spanish National Registry of Hip Fracture. Rev Esp Geriatr Gerontol. 2019 Sep - Oct;54(5):257-264. doi: 10.1016/j.regg.2019.04.001.

- Ojeda-Thies C, Sáez-López P, Currie CT, Tarazona-Santalbina FJ, Alarcón T, MuñozPascual A, et al. Spanish National Hip Fracture Registry (RNFC): analysis of its first annual report and international comparison with other established registries. Osteoporos Int. 2019; 30:1243–1254. doi: 10.1007/s00198-019-04939-2.

- Sáez-López P, Ojeda-Thies C, Alarcón T, Muñoz Pascual A, Mora-Fernández J, González de Villaumbrosia C, Molina Hernández MJ, Montero-Fernández N, Cancio Trujillo JM, Díez Pérez A, Prieto Alhambra D, Caeiro Rey JR, Etxebarria Foronda I, Gómez Campelo P, Pareja Sierra T, Tarazona-Santabalbina FJ, López Giménez R, Otero Puime A, NavarroCastellanos L, Queipo Matas R, Jiménez Mola S, López-Peña T, Cassinello Ogea C, González-Montalvo JI. Registro Nacional de Fracturas de Cadera (RNFC): resultados del primer año y comparación con otros registros y estudios multicéntricos españoles. [Spanish National Hip Fracture Registry (RNFC): results of the first year and comparison with other Spanish registries and multicentre studies] Rev Esp Salud Pública. 2019;93: 18 October 201910072.

- T. Alarcon, C. Ojeda-Thies, P. Sáez-López, P. Gomez-Campelo, L. Navarro-Castellanos, A. Otero-Puime, J.I. González-Montalvo, on behalf of the participants in the Spanish National Hip Fracture Registry. Usefulness of a national hip fracture registry to evaluate the profile

of patients in whom antiosteoporotic treatment is prescribed following hospital discharge. Osteoporos Int 31, 1369–1375 (2020). https://doi.org/10.1007/s00198-020-05341-z

RNFC REPORTS 2017 AND 2018

- "Registro Nacional de Fracturas de Cadera por Fragilidad. Informe Anual 2017". [Spanish National Fragility Hip Fracture Registry. 2017 Annual Report] Sáez López P, Ojeda Thies C, Otero Puime A and González-Montalvo JI, coordinators. Madrid: RNFC. IdiPAZ. 2018. (ISBN: 978-84-09-02513-8). (http://rnfc.es/wp-content/ uploads/2019/07/Informe-Anual-RNFC-2017.pdf)

-"Registro Nacional de Fracturas de Cadera por Fragilidad. Informe Anual 2018". [Spanish National Fragility Hip Fracture Registry. 2018 Annual Report] Sáez López P, González-Montalvo JI, Ojeda Thies C, P Gómez Campelo, authors. Madrid: RNFC. IdiPAZ. 2019. (ISBN: 978-84-09-15651-1)
Available at http://rnfc.es/wp-content/uploads/2019/11/Informe-Anual-RNFC-2018-1.pdf

RNFC MEETING RNFC 2019

On 22 February 2019, the 2nd Meeting of the RNFC was held at the Hospital Universitario Fundación Jiménez Díaz. It was opened by the Consejero de Sanidad de la Comunidad de Madrid [Regional Minister of Health of the Community of Madrid] with the topics stated on the agenda:

9:00-9:10

Opening

The Honourable Enrique Ruiz Escudero - *Consejero de Sanidad de la Comunidad de Madrid*
Dr Colin Currie - *Hip Fracture Audit Special Interest Group, Fragility Fracture Network*

9:10-9:30

1 Evolution of the project and the 2017-2018 results of the RNFC
Pilar Sáez López - *Geriatrician Hospital Universitario Fundación Alcorcón*

9:30-9:50

2 Quality standards project to improve the process
Patricia Ysabel Cóndorhuamán Alvarado - *Geriatrician Hospital Universitario La Paz*

9:50-10:10

3 Analysis of the RNFC results by communities
Pablo Castillón Bernal - *Traumatologist Mutua de Terrasa*

10:10 to 10:30

4 Comparison of the RNFC with international registries from other countries
Cristina Ojeda-Thies -*Traumatologist Hospital Universitario 12 de Octubre*

10:30 to 11:00

Debate

11:00 to 11:15

Acknowledgement of sponsors. Delivery by:
Juan Ignacio González Montalvo - Coordinating Centre Director (Group 27: IdiPAZ)

11:15 to 11:40

Break

11:40 to 12:00

5 Representativeness of the RNFC at the national level.
Comparison with CMDB data
Daniel Toledo Bartolomé - *Preventive Medicine and Quality Management Hospital General Universitario Gregorio Marañón*

12:00 to 12:20

6 Study of variability of the results.
Paloma Gómez Campelo - *Researcher at the Instituto de Investigación IdiPaz*

12:20 to 12:40

7 Evaluation of the treatment of osteoporosis in the RNFC data.
Profile of treated patients and factors associated with prescription.
Teresa Alarcón Alarcón - *Geriatrician Hospital Universitario La Paz*

12:40 to 13:00

8 How do I analyse my own data?
Laura Navarro Castellanos - *Analyst of the Spanish National Hip Fracture Registry*

13:00 to 13:30

Debate

13:30 to 14:45

Debate and proposal of new projects
RNFC working group

14:45

Closing ceremony

2nd Meeting of the RNFC at the Hospital Universitario Fundación Jiménez Díaz

RNFC

Access to the previous
RNFC 2018 Report

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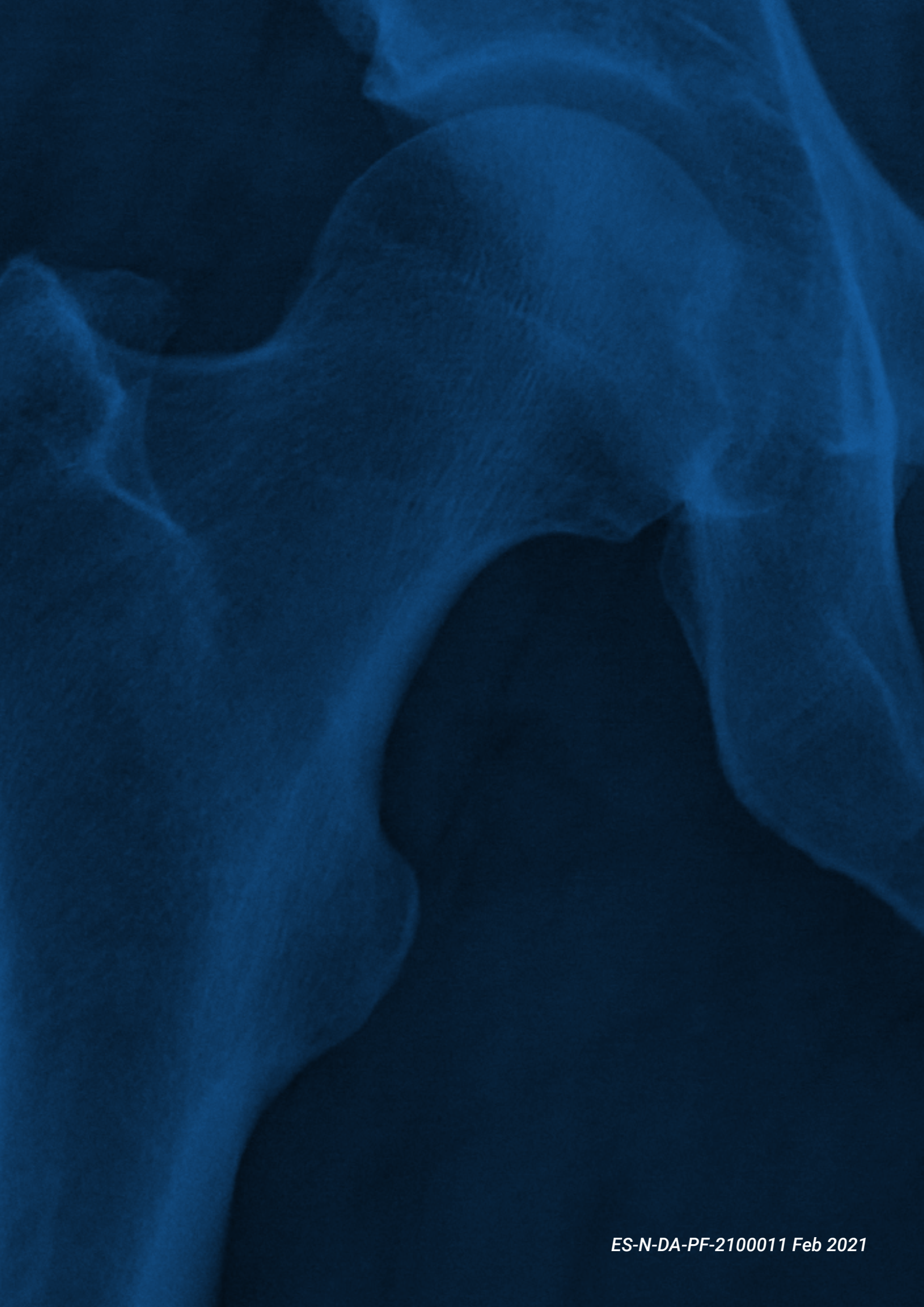
Technical Secretariat:

rnfc@bsj-marketing.es

2019



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