

Hip fractures in the Royal Victoria Hospital, Belfast: A 15-year experience for hip fractures from a regional trauma centre

Mrs Julie Craig (Orthopaedic Specialty Doctor), Mrs Sinead McDonald (Fracture Outcomes Research Database),
Dr Gary Heyburn (Consultant Ortho-physician), Mr R John Barr (Consultant Orthopaedic Surgeon)
Royal Victoria Hospital, Belfast

Background

- The Royal Victoria Hospital (RVH) in Belfast received 865 – 1066 hip fracture admission per year in from 2000-2015
- The Fracture Outcomes Research Database (FORD) was created 16 years ago for collection of inpatient fracture data.

Low 30-Day mortality rate

- The UK National Hip Fracture Database (NHFD) identified RVH as the sole "outlier" - with mortality below the lower 99.8% limit^[1] for hip fracture admissions in 2014 (Figure 1).**
- 'In 2014 the crude mortality rate (4.4%) & adjusted rate (3.9%) for this unit lay well below the 7.5% average for the NHFD.'^[1]
- Mortality rates have been independently verified by Business Services Organisation.

Aim

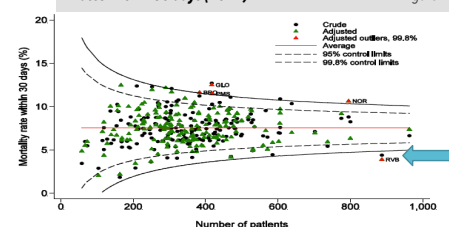
- The aim was to review demographic and clinical factors which may have contributed to these low mortality rates and their gradual improvement over several years.**

Method

- The Fracture Outcomes Research Database supplied data for 15,345 hip fracture patients admitted to RVH between 2000 & 2015, including inpatient data and telephone follow-up data (for 30 days, 120 days, and 1 year excluding patients in 2015).
- No age-groups were excluded.

Funnel plot of crude and adjusted mortality rates within 30 days (2014)

Figure 1



Results

Improvements not attributable to lower ASA or ASA grades:

- Increasing mean patient age (now 60% aged 80 or over – Figure 2).
- Increasing mean ASA (now 54% ASA Grade 3 and 26% ASA 4 – Figure 3).

Improvements not attributable to 'easier operations':

- Increasing numbers of more complex procedures such as IM nails and THR (Figure 4).

Improved compliance with evidence-based guidance has occurred

(e.g. NICE guidelines^[2] and AAGBI guidelines^[3])

- Cemented hemiarthroplasty is used in almost 75% of displaced intracapsular fractures (Figure 5).
- The rate of THR for eligible patients (25%) has been close to the NHFD average.
- All arthroplasty is cemented, with routine use of the AAGBI guidelines on reducing the risk from cemented hemiarthroplasty^[3].
- Over 75% of 'simple' extracapsular fractures are treated with a DHS, & the rest with IM nails (Figure 6).
- IM nails are now used for 94% of subtrochanteric fractures (Figure 7).
- Good adherence to other points of NICE guidance has been routinely implemented (Figure 8).
- Time to theatre remains an issue, with most patients waiting around two days for surgery, of which over 80% is RVH inpatient waiting time (Figure 9).**
- RVH is subject to UK Department of Health 48-hour targets.
- The Best Practice Tariff funding criteria (not available in Northern Ireland) require surgery to occur on the day of admission or the following day.
- Considering 36 hours as more comparable this, **only 26% of RVH patients were operated on within 36 hours in 2014 (Figure 10).**
- Mortality rates for the first 30 days, and for 1 year, are low and have been gradually improving (Figure 11).
- The highest mortality rate occurs in the very small number of patients (<2%) who cannot be medically optimised to allow surgery (shown in orange in Figure 12).
- However, mortality rates have been low for operated patients of all ASA grades.
- 30-day mortality rates rise with ASA, but recent results have been improved in comparison with the average since 2000 (stated as 'overall' in Figure 13).
- While we are striving to improve waiting times and don't for a moment condone delays, we have observed that patients who had to wait over 36 hours had a better 30-day survival rate than those operated on within 36 hours (Figure 14).**
- This is difficult to explain but it is probably due to our high level of ortho-physician care (Figure 15).**
- It is our view that our key strength is our multidisciplinary team work in the best interests of each patient.**

Conclusion

RVH displays low 30-day mortality rates despite delays to theatre, seemingly due to

- Rationalisation of treatment according to evidence and guidelines
- High level of ortho-physician input and,
- Multi-disciplinary co-operation.

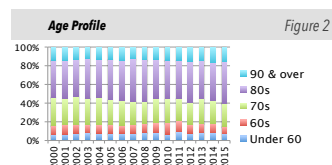


Figure 2

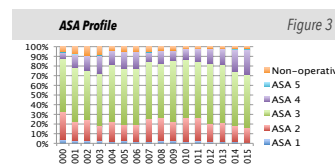


Figure 3

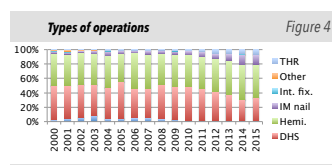


Figure 4

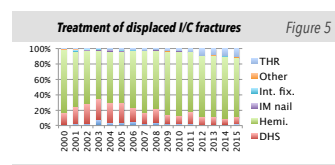


Figure 5

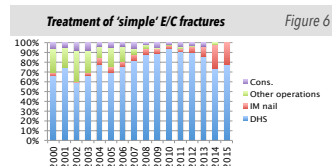


Figure 6

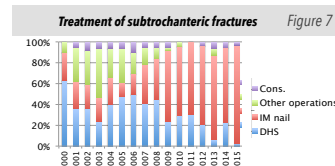


Figure 7

Other NICE compliance

Other NICE recommendations	RVH
Surgery on day of/day after admission	45% within 36 hr in 2015
Planned trauma list	Standard
Aim to FWB immediately	Standard
Stem of proven design	Standard
Cement in arthroplasty	Standard
Anterolateral approach	Standard

Figure 8

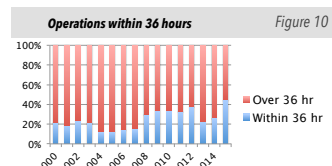


Figure 10

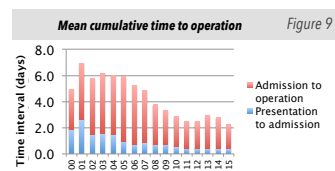


Figure 9

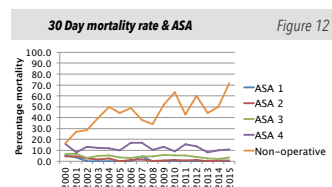


Figure 12

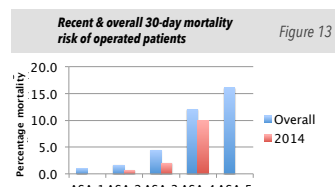


Figure 13

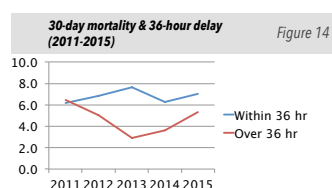


Figure 14

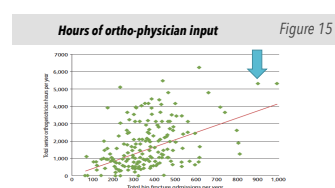


Figure 15

[1] Royal College of Physicians. National Hip Fracture Database mortality supplement 2016. London: RCP, 2016.
[2] National Clinical Guideline Centre. The Management of Hip Fracture in Adults. London: National Clinical Guideline Centre, 2011.
[3] Association of Anaesthetists of Great Britain and Ireland. Safety guideline: reducing the risk from cemented hemiarthroplasty for hip fracture 2015. Anaesthesia 2015, 70, 623-626.