Key Service Improvements After the Introduction of an Integrated Orthogeriatric Service

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Abstract

Introduction: Models of orthogeriatric care have been shown to improve functional outcomes for patients after hip fractures and can improve compliance with best practice guidelines for hip fracture care. Methods: We evaluated improvements to key performance indicators in hip fracture care after implementation of a formal orthogeriatric service. Compliance with Irish Hip Fracture standards of care was reviewed, and additional outcomes such as length of stay, access to rehabilitation, and discharge destination were evaluated. Results: Improvements were observed in all of the hip fracture standards of care. Mean length of stay decreased from 19 to 15.5 days (mean difference 3.5 days; *P* < .05). A higher proportion of patients were admitted to rehabilitation (16.7% vs 7.9%, *P* < .05), and this happened in a timelier fashion (17.8 vs 24.8 days, *P* < .05). We found that less patients required convalescence post-hip fracture. Discussion: A standardized approach to integrated post-hip fracture care with orthogeriatrics has improved standards of care for patients. Conclusion: Introduction of orthogeriatric services has resulted in meaningful improvements in clinical outcomes for older people with hip fractures.

Keywords
orthogeriatric care, integrated care, rehabilitation, trauma surgery, systems of care, fragility fractures, hip fractures

Background

Hip fractures are a major contributor to morbidity and mortality in older people and can have a devastating impact on their quality of life. The mortality rate of hip fracture for older people is high with up to 30% at 12 months. A quarter of patients who were living independently before a fall leading to a hip fracture require admission to a nursing home after a hip fracture.

Older patients after hip fracture benefit from comprehensive geriatric assessment and input from orthogeriatrics as well as the wider multidisciplinary team (MDT). Specialist orthogeriatric care has been shown to reduce the risk of perioperative complications, functional deterioration, and mortality rates. Early models of orthogeriatric care have existed since the mid-20th century, however, it is only in recent times that widespread integration of such models has occurred. This model of care has had a very positive effect on outcomes for older patients with hip fracture including a reduction in in-hospital complications, length of stay (LOS), functional disability, and in hospital mortality.

The Irish Hip fracture database (IHFD) was launched in 2012 as a statutory audit tool to help improve hip fracture care in Ireland and has been used to benchmark quality indicators. Early orthogeriatric involvement in patients’ care is an expected standard of care and is part of the Irish Hip Fracture standards of care (IHFS). When all IHFS have been achieved for a patient with hip fracture, the hospital is reimbursed through a best practice tariff. International comparisons of the Irish Hip Fracture pathway with the United Kingdom and Germany has demonstrated that that Irish system has longer...
average LOSs and low rates of orthogeriatric input.9 We sought
to evaluate the outcomes in our center after the implementation
of a dedicated Orthogeriatric service.

We wanted to evaluate the levels of compliance to IHFS
standards in a tertiary referral hospital which treats approxi-
mately 300 hip fractures annually and compare outcomes for
patients before and after the introduction of a dedicated ortho-
geriatric service. We hypothesized that improved continuity of
care by regular orthogeriatric review would result in an
improvement in a number of markers of care. We examined
key performance indicators (KPIs) such as rehabilitation
admission rate, rehabilitation LOS, and proportion of patients
discharged directly home. These KPIs are surrogates of good
quality care and to our knowledge have not been examined in
detail in previous studies. We looked at the number of inpatient
consults sent for each time period and compared the number of
general medical consults sought by the orthopedic team for a
similar time period before the service, with the hypothesis that
more integrated care would result in less general medical con-
sumts to other medical specialities.

The New Orthogeriatric Service

The new orthogeriatric service consisted of several changes to
the logistical and clinical elements of the hip fracture pathway.
Prior to establishment of the new orthogeriatric service, patients with hip fractures were admitted to the trauma ward
under the sole care of the primary orthopedic surgeon. There
was no formal orthogeriatric review service, and patients were
referred to geriatric medicine on an ad hoc basis, at the discre-
tion of the orthopedic team, often when complications were
encountered.

The new service is led by a consultant orthogeriatric physi-
cian, who is supported by a full-time registrar in geriatrics. All
new patients with a hip fracture receive a comprehensive ger-
iatric assessment on admission. There is a constant geriatric
medicine presence on the ward and the registrar plays a key
role in liaising with the orthopedic team in addition to biweekly
consultant ward rounds and MDT meetings. This presence
allows early detection of postoperative complications and streamlines the process for patients to access off-site rehabili-
tation, nursing home placement, and timely and discharges
with appropriate supports.

Methods

A prospectively maintained database was reviewed. Patients
presenting with a hip fracture between 2 specific time periods
were included and compared. These periods were August
2018 to February 2019 (after introduction of the orthogeriatric
service), and August 2017 to February 2018 (before
introduction of the Orthogeriatric service). The same time
frame was included over both years to account for seasonal
variances; 285 patients with hip fracture were identified
during a 12-month period. All patients had their data inputted
into the national hip fracture database and IHFS were
recorded (Table 1).

All data were prospectively entered to the IHFD by a dedi-
cated orthopedic trauma nurse. All patients also had their data
authenticated by the geriatric team, with case ascertainment
having demonstrated to improve the reliability fidelity of the
data collection in previous studies examining IHFD
patients.10 Variables of interest collected included patient
demographics, fracture type, orthopedic LOS, discharge des-
tination, rehabilitation assessment, rehabilitation admissions,
rehabilitation LOS, and new nursing home admissions. We
compared the proportion discharged directly home instead of
to convalescence.

Statistical analysis was conducted using SPSS. The chi-
square test of homogeneity of 2 proportions was used to
determine whether there was a statistical difference. A
P value of < .05 was taken to be significant. The age-
groups and gender were compared using the above method
to determine whether there was a statistical difference
between the groups.

Results

Similar numbers of patients with hip fracture were seen in each
time period (n = 146 vs n = 139) with similar age profiles (81.8
vs 79.6 years). Mean LOS on the orthopedic ward decreased
from 19 to 15.5 days (mean difference 3.5 days; P < .05).

Adherence to IHFS

Improvements were seen in all of the 6 IHFS. Higher propor-
tions of patients reviewed after the orthogeriatric service
commenced achieved standard 4, 5, and 6 (Table 2). The most
significant improvements were an increase from 31.2% to
96.5% in the proportion of patients seen by a geriatrician, and
an increase from 7.4% to 98.5% in those who had a formal falls
assessment.

Less patients required medical team consults after the ser-
vice began (32.2% vs 46.8%, P = .016). The resultant total
number of consults sent over the 6-month period fell from 120
consults to 59 consults.

Table 1. Irish Hip Fracture Standards.

| IHFS1 | Percentage of patients admitted to an orthopedic ward within 4 hours of first presentation or directly to the theatre from the ED within 4 hours |
|-------|-------------------------------------------------------------------------------------------------------------------------------------|
| IHFS2 | Percentage of patients receiving surgery within 48 hours of first presentation (and within normal working hours)                      |
| IHFS3 | Percentage of patients developing a pressure ulcer following admission                                                             |
| IHFS4 | Percentage of patients reviewed by a geriatrician at any point during admission                                                     |
| IHFS5 | Percentage of patients receiving a bone health assessment                                                                       |
| IHFS6 | Percentage of patients receiving a specialist falls assessment                                                                  |

Abbreviations: ED, emergency department; IHFS, Irish Hip Fracture standards of care.
The introduction of an orthogeriatric service has substantially improved the quality of care for older people with hip fracture as well as compliance with IHFS in this tertiary referral hospital. This initiative strongly provides evidence that this combined MDT approach achieves this goal. The LOS was examined as a primary outcome, with secondary end points including discharge directly home and new NH admissions. Our reduction in LOS is on par with international results after implementation of dedicated orthogeriatric programs. The improvements demonstrated on discharge destination and numbers getting to rehabilitation as well as shorter rehabilitation stays show the value of the orthogeriatric model of care most importantly from a patient perspective but also from an organizational perspective. The deficits in service had been highlighted in the 2016 IHFD report and we can see in this study how benchmarking from national data sets identified the need to improve local outcomes and this led to improvements in local practice.

A number of reports have emerged from the NHS with respect to “getting it right the first time” and this core philosophy is embodied in the improved provision of care to this vulnerable cohort. In our study, we have seen how introduction of dedicated Orthogeriatric services has improved care for older people with hip fractures and has resulted in positive improvements to KPIs, resulting in meaningful improvements in clinical outcomes for patients in a cost-effective manner. Improvements in quality indicators such as mortality and LOS have obvious clinical, financial, and service benefits. These have been recommended as objective pillars in evaluating hip fracture care. We noted that there was a reduction in the number of medical consults requested by orthopedic teams and feel that this reflects the improved quality and continuity of care for these patients.

Our Orthogeriatric model was based on the model of an Orthopedic ward with integrated geriatric care. This is a model that has been shown to have the lowest inhospital mortality and lowest LOS in comparison to other models of care. An unexpected benefit of this was an increased proportion of patients admitted to dedicated rehabilitation. The patients participating in rehabilitation were the most medically complex cohort with ongoing rehabilitation and medical needs and we noted that the LOS in rehabilitation decreased, which is consistent with other research in patients with hip fracture. All patients who went to rehabilitation ultimately were discharged to home, and these results highlight the crucial role of orthogeriatrics in providing rehabilitation and guiding discharge planning.

Supporting a return to independent living is an important part of the orthogeriatric care pathway. The successful execution of a discharge directly home avoids the costly alternative of institutional care and is more importantly favored by older people themselves. We found a trend toward less nursing home admissions which has also been previously seen with the orthogeriatric model of care when predictors of institutionalization post-hip fracture have been examined. We found that less patients had a post-acute respite stay, which is another significant end point for patients. Respite stays are used frequently in patients with hip fracture often due to bed pressures or deficits in community care, despite the fact that they have not been shown to reduce acute hospital use and are not cost efficient for the patient or the hospital. Respite stay for orthopedic patients in particular has not been shown to reduce hospital LOS.

Strengths of the study include the fact that our control group is drawn from the same population, the same time period, the same hospital, and the same cohort of surgeons as the intervention group, and this homogeneity is likely to reduce bias and confounding. The same rehabilitation resources were available to both cohorts, the only difference being the coordinated
approach in care by a senior orthogeriatric physician. With any significant systems change, attitudes and behaviors are important, and these can occur over time. We extracted data shortly after the implementation of the service, and it is possible that the patients with hip fracture admitted from the start date of the intervention would have initially experienced a differential effect as the system was restructured. We may not have captured hidden improvements in attitudes and behaviors that would occur as the new system became firmly established.

A limitation to this study includes the fact that 2 different cohorts are being compared; however there was a dedicated orthopedic trauma nurse who was involved in the data collection in both groups, minimizing misclassification bias. Longer term follow-up will be needed to confirm these results, although international comparisons have shown sustained benefits after similar integrated programs of care.21

Conclusion

Introduction of orthogeriatric services has resulted in meaningful improvements in clinical outcomes for older people with hip fractures. The improvement of the service involved collaboration, streamlining existing services, and fostering a culture of change with patient care as the primary goal. This is something which has been proven to yield results in an Irish health care setting. Our experience would back up evidence for ensuring this service is in all hospitals who look after patients with hip fracture and the need for close follow-up to evaluate outcomes.

Declaration of Conflicting Interests

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