Optimizing knee arthroscopy documentation using a new template

Introduction: The purpose of the study was to assess the quality of documentation of knee arthroscopy and evaluate the implementation of a novel operative template.
Method: A 34-point assessment was undertaken based on published national guidelines. A retrospective study of 50 operative notes of patients (group A) undergoing knee arthroscopy was completed. A new operative note template was devised to include important criteria and assessed in 49 patients (group B) for its efficacy in providing appropriately detailed findings.
Results: Group A was lacking the minimum essential documentation standards expected. Some essential criteria for arthroscopic procedures were as low as 4%. Group B showed a statistically significant increase ($P<0.001$) in documentation accuracy throughout the essential criteria compared to the findings in group A.
Conclusions: The authors conclude that the use of an evidence-based operative template for knee arthroscopy significantly improves the quality and accuracy of documentation compared to conventional free-hand operative notes.

Introduction

Knee arthroscopy is one of the most commonly performed orthopaedic procedures worldwide. In England alone there are over 60 000 knee arthroscopies performed per year, equating to an annual incidence of 9.9 knee arthroscopies per 10 000 in the English population (Jameson et al, 2011). It is not uncommon for a patient to be cared for by different consultants during the investigation and management of the same disease. It is therefore crucial that accurate and detailed documentation is carried out during every step of the patient's care in order to optimize handover between teams so that the highest level of care is consistently achieved. Good documentation also forms an integral part of good clinical practice in terms of medicolegal aspects.

The Royal College of Surgeons of England (2008) has constructed a comprehensive guidance manual based upon principles set out by the General Medical Council on how best to achieve and maintain high clinical standards, entitled *Good Surgical Practice*. This has been endorsed by various specialist associations and societies. Currently most operative notes within England are hand written free text by the operating surgeon.

The primary aim of this study was to assess the quality and accuracy of documentation in the operative notes of arthroscopic knee procedures within the authors' hospital as compared to the standards set by *Good Surgical Practice*. The secondary aim was to assess the quality of documentation of knee arthroscopies following the implementation of a new operative template and compare the findings of both groups.

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Materials and methods

A set of essential criteria was devised using the recommended standards set out by the Royal College of Surgeons of England (2008) in *Good Surgical Practice* based on which details all operative notes should have, as a set standard, in order to maintain good clinical practice.

A separate set of desirable criteria was formed based on recommendations from the British Orthopaedic Association (2009) and the British Association for Surgery of the Knee on which findings during an arthroscopic knee procedure will have a significant impact on the management of a patient with soft tissue knee pathology. The authors also asked the soft tissue knee specialists within their institution which documentation they would like to have in an operative note when a patient is referred to their care in order to facilitate accurate diagnosis and optimize future planning and management.

A 34-point assessment of key and desirable criteria was made of each operative note based on guidelines from the Royal College of Surgeons of England, General Medical Council, British Orthopaedic Association and British Association for Surgery of the Knee.

The 34-point assessment tool was constructed to analyse two broad areas consisting of 15 key domains and 19 desirable domains. The key domains are details applied to arthroscopic knee procedures that every operative note should contain and considered essential as per the standards set out by the Royal College of Surgeons of England. The desirable domains are details documented in the operation notes that soft tissue knee specialists would benefit from, as advised by the British Orthopaedic Association and the British Association for Surgery of the Knee, but which have not been deemed compulsory by the governing bodies.

A retrospective evaluation of 50 conventional free-hand operative notes of patients (group A) undergoing knee arthroscopy within the authors' trauma and orthopaedics department was completed.

A new operative note template (*Figure 1*) was then devised to include the criteria recommended by these guidelines and indicate important findings relevant for further interventions.

This new operative template was implemented in trauma and orthopaedic theatres to be used by all surgeons for arthroscopic knee procedures within the hospital instead of the conventional free-hand operative note. The template was then analysed for its efficacy in providing appropriately detailed findings in the operative notes of 49 patients (group B) in order to achieve accurate documentation.

Statistical analysis

The unpaired Student's *t*-test was used to compare all the data between the two groups. These had a normal distribution and satisfied parametric test assumptions. The authors considered a statistically significant effect at a two-sided *P*-value of less than 0.05. In order to minimize the risk of a type I error arising from multiple statistical comparisons, the arithmetic mean of the sum total of the key domain data and that of the desirable domain data was used as the measure of central tendency when comparing the two groups.

Results

Key domains

In the conventional standard operative note, the level of documentation deemed essential by current guidelines for the key domains documented (*Figure 2*) were lacking the minimum standards in group A, but details attributable to patient labels were present in 100% of the operative notes. Details regarding the use of intraoperative medications such as antibiotics and local anaesthetics were low despite being deemed essential for documentation.

After implementing the new operative note template there was a statistically significant increase ($P<0.001$) in the number of domains completed in group B as compared to that of group A, indicating an improvement in both detail and clarity of documentation (*Figure 3*). The percentage of documentation throughout all essential criteria (*Figure 2*) exceeded 90% with the exception of documentation of antibiotics which increased from 42% to 77%, and the documentation of the surgeon's assistant which decreased from 74% to 66%.

Desirable domains

The detail in free-hand conventional documentation of desirable domains (*Figure 2*) that would benefit a soft tissue knee specialist were found to be minimal in group A, some criteria being as low as 4% (documentation of a joint effusion). Other findings that were deemed desirable such as the appearance of the synovium and inspection of the medial and lateral gutters were recorded in as few as 6% of cases. The state of the menisci and chondral surfaces reached a maximum of 92% documentation.

When analysing the results of the new operative note template there was a statistically significant increase ($P<0.001$) in the number of desirable domains recorded in group B compared to that of group A, suggesting a further increase in the level of detail and accuracy of documentation (*Figure 3*). Out of 19 desirable criteria (*Figure 2*), 10 had a 100% documentation rate using the new template, while most other criteria were close to 90%. The rate of documentation of a knee effusion increased from 4% to 86% with a similar

Figure 1. Knee arthroscopy operative note template.

KNEE ARTHROSCOPY RIGHT/LEFT

Date:......................................
Consultant:.............................
Surgeon:.................................
Assistant:................................
Anaesthetist:...........................
GA / LA / Epidural
Tourniquet Y/N Time.........
Pressure....................
Antibiotics Y/N Tinzaparin Y/N

PROCEDURE PERFORMED

Patient Sticker
Name
DOB
Number

EUA findings: Normal Yes ☐ No ☐
ROM........................... Any block to extension?......Y/N
MCL......... LCL.......... Lachman's........... Pivot Shift............. Posterior drawer.............
Reverse Pivot Shift.............. Anterior draw in ER........... Anterior draw in IR..............

Standard Portals used: ☐ Effusion: none ☐ clear ☐ bloodstained ☐ other................
Other Portals ....

Patellofemoral
Lateral Facet NAD ☐ I II III IV Chondral Defect ☐ Size ....x.......mm
Medial Facet NAD ☐ I II III IV Chondral Defect ☐ Size ....x.......mm
Trochlea NAD ☐ I II III IV Chondral Defect ☐ Size ....x.......mm
Tracking symmetrical ☐ asymmetrical ☐
Plica Yes ☐ No ☐ Synovitis Yes ☐ No ☐

Medial Compartment
MFC NAD ☐ I II III IV Chondral Defect ☐ Size ....x.......mm
Plateau NAD ☐ I II III IV Chondral Defect ☐ Size ....x.......mm
Meniscus NAD ☐ ☐ degenerative ☐ bucket ☐ peripheral
Tear ☐ horizontal ☐ complex ☐ radial ☐ vertical Gutter..................

Lateral Compartment
LFC NAD ☐ I II III IV Chondral Defect ☐ Size ....x.......mm
Plateau NAD ☐ I II III IV Chondral Defect ☐ Size ....x.......mm
Meniscus NAD ☐ ☐ degenerative ☐ bucket ☐ peripheral
Tear ☐ horizontal ☐ complex ☐ radial ☐ vertical Gutter..................

Loose Bodies ☐ Notch.....................

Ligaments
ACL NAD ☐ torn ☐ attenuated ☐ PCL NAD ☐ torn ☐ attenuated ☐

Outerbridge Classification
0 – Normal Cartilage
I – Cartilage with softening and swelling
II – A partial-thickness defect with fissures that do not reach subchondral bone or exceed 1.5cm in diameter
III – Fissuring to the level of subchondral bone in an area with a diameter more than 1.5cm
IV – Exposed subchondral bone

RIGHT LEFT
Intra operative photos yes ☐ no ☐ Intra operative photos yes ☐ no ☐

Closure
Steri strips ☐ Ethilon ☐ LA type........................ volume....................

Post op Plan
Neurovascular obs
Analgesia
Antibiotics Y/N Duration...............
Tinzaparin Y/N Duration...............
Wt bear FWB ☐ PWB ☐ NWB ☐ ....../52
ROS ....../52 None ☐
OPD ..../52

Comments:

Name... Designation.......... Signature............................ Date..................

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increase in the inspection of the medial and lateral gutters. However, there was a decrease in the documentation of loose bodies from 12% to 6% of cases.

Figure 2. a. Key domains and (b) desirable domains operative note documentation rate. Group A (standard free-hand); group B (new template).

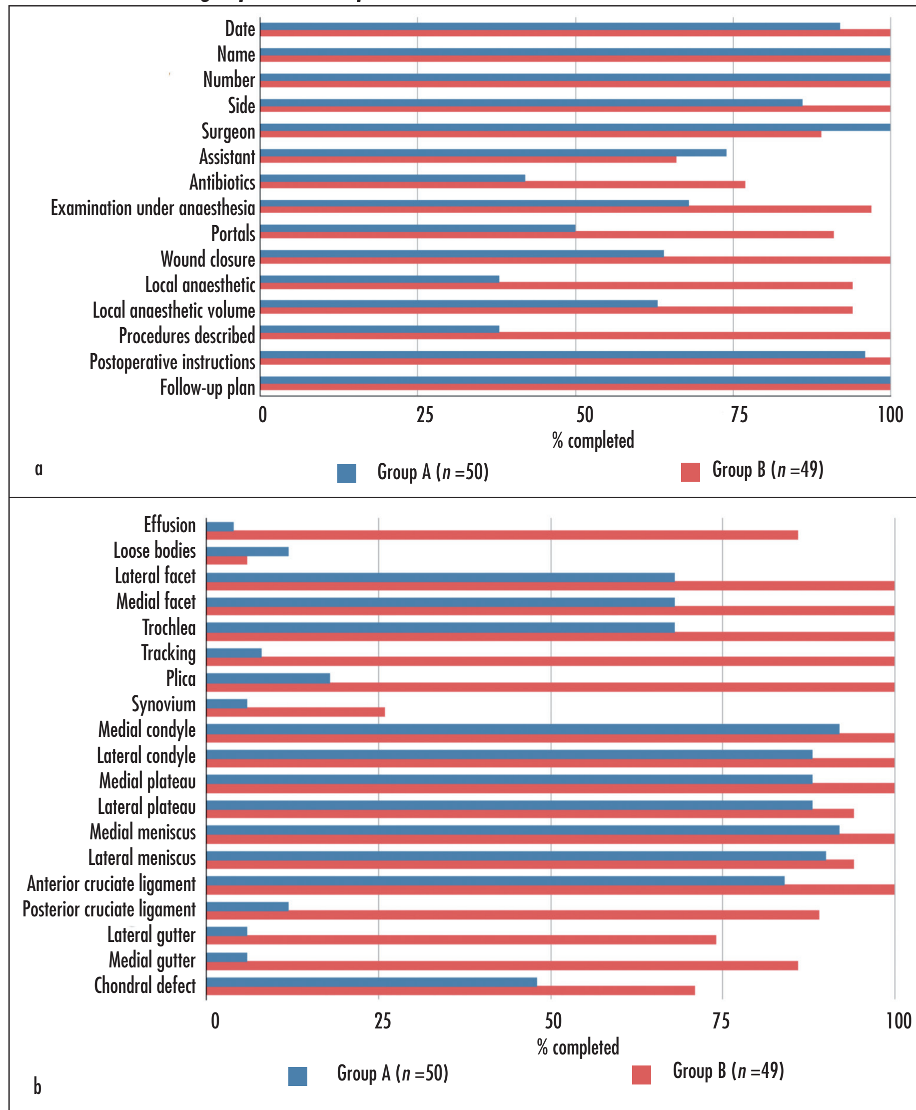
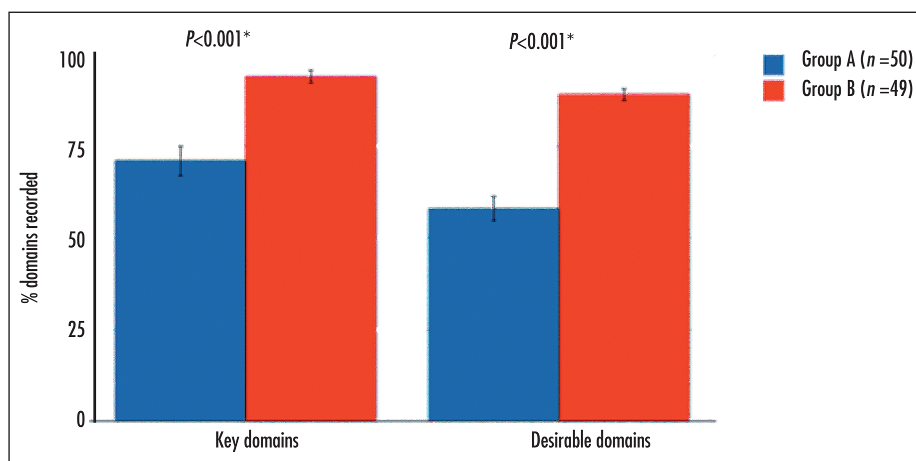


Figure 3. Statistical comparison of summated mean data for key and desirable domains. Group A (standard free-hand); group B (new template). *Unpaired Student's t-test.



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Discussion

This study has shown that the quality and accuracy of free-hand conventional documentation was poor. After implementation of the new template the accuracy of documentation significantly improved, providing more detail and clarity in the operation notes to enable continuity of care by another doctor. Ultimately this should help prevent repeat surgery and improve documentation from a medicolegal perspective.

Patients sustaining soft tissue knee injuries or pathology within the knee joint commonly undergo magnetic resonance imaging and subsequent knee arthroscopy for diagnostic and therapeutic purposes. Once a diagnosis is made during the knee arthroscopy this is documented in the operative notes and a referral may be made to a soft tissue knee specialist for further management. It is at this stage that accurate documentation within the operative note is crucial for accurate diagnosis and continuing treatment, and allows appropriate further management planning by a soft tissue knee specialist.

When care is taken over by a soft tissue knee specialist, insufficient documentation within the operative note can lead to repeat surgery to obtain the required detail for appropriate patient management. This is detrimental to patients with increased risk of operative complications, further anaesthetic exposure, more hospital stays and longer time off work. It also creates unnecessary demands on limited hospital resources.

When comparing the level and detail of documentation between the standard free-hand operative note and the implemented operative note template, it can be seen that there is a vast improvement throughout the criteria in both key domains and desirable domains. From a medicolegal perspective, litigious cases can be defended more robustly if there are clearly documented operative notes, indicating the presence or absence of pathology at the time of surgery (Al Hussainy et al, 2004).

There are limitations to this study relating to both domains. For the key domain, it was noted that the rate of documentation was lower in group B for both the surgeon and the assistant point assessments. The majority of arthroscopies in this study were performed by the consultants themselves. On the new template (*Figure 1*) the con-

sultant field (which was always completed) is directly above the surgeon field. In order to reduce repetition, the operating consultant surgeon documented their name once on the operation note. In this study, assistants were rarely used in knee arthroscopies, hence this field was often vacant. Although the documentation rate of the antibiotics field was higher in group B, it was still under 90%, but this is because antibiotics were rarely used in this study.

Weaknesses in the desirable domain were also noted. There was a slightly reduced documentation rate in group B of the loose bodies criterion compared to that of group A. The new operative note did not include this field, indicating that template use prompts surgeons to still actively seek out other important findings during the procedure and document them. Although the documentation rate of the synovium criterion was higher in group B than group A, it still remained relatively low. Overall, pathology arising from the synovium was low in the patients included in this study, hence the low percentage of documentation of this particular field and of loose bodies.

The Royal College of Surgeons of England (2008) states in *Good Surgical Practice* that operative notes should be legible. A number of free-hand operative notes were not legible and so many fields were recorded as not documented within the study. The new template is printed and standardized, using a tick-box format, which dramatically improved the legibility of all surgeons' operative note keeping (Ghosh, 2010). Surgeons found the template more efficient to use while still having space to add optional free-hand documentation, if needed. As a standardized template, soft tissue knee specialists also know where in the operative note to look for specific areas of interest, while this is highly variable in the free-hand operative note from surgeon to surgeon (Barritt et al, 2010). Suggestions for further improvement may include devising a method to adhere the printed arthroscopy photos, as they are also an important part of the documented findings of the operation.

The theatre staff keep a supply of the new operative note templates inside the orthopaedic theatre for ease of access by surgeons. Supplies of the templates are replenished when they become depleted by printing out more from the theatre computer upon which the template is stored. This makes this new intervention easily sustainable. As the senior author works permanently within this department this also helps to ensure that the template continues to be used.

In light of the success and significant improvement of this knee arthroscopy compared to historic practice all consultants who perform knee arthroscopies are now using the newly designed operative template as standard practice.

Conclusions

The authors have devised a new operative template for knee arthroscopy that significantly improves the quality of documentation. Clear documentation is not only important for patient safety but also for adequate referral to a specialist, research and for clinical coding purposes to accurately record patient episodes. **BJHM**

Conflict of interest: none.

LEARNING POINTS

- In the authors' institution, most operation notes for knee arthroscopies were written free hand and were significantly lacking in documentation of data points that are considered essential.
- The use of an evidence-based knee arthroscopy operative note template significantly improved the quality and accuracy of documentation.
- Using well-constructed operative note templates for knee arthroscopy has the potential advantage of facilitating specialist referrals, research and clinical coding.

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