Improving the Quality of Oral and Maxillofacial Surgical Notes in an Indian Public Sector Hospital in Accordance with the Royal College of Surgeons Guidelines: A Completed Audit Loop Study

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Abstract

Aim Proper and adequate documentation in operation notes is a basic tool of clinical practice with medical and legal implications. An audit was done to ascertain if oral and maxillofacial surgery operative notes in an Indian public sector hospital adhered to the guidelines published by the Royal College of Surgeons England.

Methods Fifty randomly selected operative notes were evaluated against the guidelines by RCS England with regards to the essential generic components of an operation note. Additional criteria relevant to oral and Maxillofacial Surgery were also evaluated. Changes were introduced in the form of Oral and Maxillofacial Surgery specific consent forms, diagram sheets and a computerized operation note proforma containing all essential and additional criteria along with prefilled template of operative findings. Re-audit of 50 randomly selected operation notes was performed after a 6 month period.

Results In the 1st audit cycle, excellent documentation ranging from 94 to 100 % was seen in 9 essential criteria. Unsatisfactory documentation was observed in criteria like assistant name, date of surgery. Most consent forms contained abbreviations and some did not provide all details. Additional criteria specific to Oral and Maxillofacial Surgery scored poorly. In the 2nd Audit for loop completion, excellent documentation was seen in almost all essential and

additional criteria. Mean percentage of data point inclusion improved from 84.6 to 98.4 % ($0.001 < P \text{ value} < 0.005$). The use of abbreviations was seen in only 6 notes.

Conclusion Regular audits are now considered a mandatory quality improvement process that seeks to improve patient care and outcomes. To the best of our knowledge, this is the first completed audit on operation notes documentation in Oral and Maxillofacial Surgery from India. The introduction of a computerized operation note proforma showed excellent improvement in operation note documentation. Surgeons can follow the RCS guidelines to ensure standardization of operation notes.

Keywords Audit · Operation notes · Documentation · Oral and maxillofacial surgery · Guidelines

Introduction

Proper and adequate documentation is one of the key components of good medical practice [1]. For surgical specialties, the operative notes are a vital legal document that details important intra-operative findings and postoperative management. The onus of ensuring accurate documentation falls on the surgeon and a lackadaisical attitude can have serious medical and legal consequences. According to the Royal College of Surgeons of England published guidelines in “Good Surgical Practice”, surgeons must ensure that all medical records are “legible, complete and contemporaneous and include the accepted identification details of the patient” [2]. These guidelines clearly specify the essential generic components that any operation report should include in order to make it fully informative and medico-legally robust. One of the authors (BK) is a member of the newly constituted hospital quality

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council which aims to improve patient safety measures through better communication, documentation and check-lists as appropriate. The aim of this audit is to compare our practice of operation note documentation for Oral and Maxillofacial Surgery against the RCS England guidelines, and to re-evaluate this after introducing certain changes, if applicable, to improve standards.

Methods and Results

An audit of oral and maxillofacial operation notes was performed at the authors' institution, which is a tertiary level public sector hospital and medical school in Southern India, wherein, the Department of Dentistry provides elective and emergency oral and maxillofacial surgical services. Fifty handwritten operation notes of a total of 77 cases were randomly selected from a period of January to December 2013 and assessed to determine if notes met guidelines as stated by the Royal College of Surgeons (Table 1). Additional criteria relevant to Oral and Maxillofacial Surgery such as consent forms, wound classification, antibiotic prophylaxis, duration of surgery, estimated blood loss with detail of intra-operative transfusion, if any, and diagrams/pictures of the procedure/implants were also assessed. Operation notes were limited to surgical procedures performed under general anesthesia with operations ranging from management of maxillofacial fractures, drainage of deep neck fascial space infections, to excision of benign and malignant lesions of the oral cavity. For each criterion assessed, a '1' was given if the guidance was fulfilled, and a '0' if it was not. Legibility of the notes was evaluated by a single nursing staff who had no prior

experience of working with maxillofacial unit. Data were analyzed using a Microsoft Excel program and results were expressed as frequencies/percentages. Compliance >90 % was considered as 'Excellent'. 'Fair' and 'Poor' ratings were given for compliance of 80–89 % and <80 % respectively. Statistical analyses were performed applying the *T* test using the Statistical Package for Social Sciences (SPSS, Version 19).

The results of the 1st Audit were presented and discussed in one of the monthly morbidity meetings of the department. The 1st Audit revealed excellent documentation with regards to the following: patient identification ($n = 50$), date of surgery ($n = 50$), Operating surgeon ($n = 48$), elective/emergency procedure ($n = 47$), diagnosis ($n = 47$), incision ($n = 50$), closure technique ($n = 50$), postoperative instructions ($n = 50$) and signature ($n = 48$). As consumables for maxillofacial trauma are purchased in bulk through a common tender, the entry of the serial number of the implants in the operation notes was not practically possible in our setting. Fair compliance in documentation were observed with: Anesthetist name (82 %), Operative findings (86 %), details of tissue removed, i.e., teeth, lesion tissue for biopsy (88 %). However, poor documentation was seen with Name of Assistant (62 %) and Time of surgery (38 %). The 1st cycle also showed poor documentation in additional criteria evaluated: duration of surgery (24 %), estimated blood loss (12 %) and diagrams/pictures for surgical procedure (18 %). The Royal College Guidelines also specify that all operations must have a signed and dated consent form that contains information on site/side of proposed procedure along with complete avoidance of any abbreviations. While all the consent forms were signed and dated, the site *and* side of operation were often not documented. Further, abbreviations were routinely used which included terms such as ORIF (Open Reduction and Internal Fixation), MMF (Maxillomandibular Fixation), I & D (Incision and Drainage) and WLE (Wide local Excision). Thirty-seven and 13 notes were categorized as "fully legible" and "partially legible" respectively. No operation note record was considered "illegible". After discussion, certain changes were introduced to improve the standards. These included:

- (a) A computerized operation note proforma sheet that contained "essential criteria" headings with spaces for filling in the data. The general format of this operation record was similar to that proposed by Payne et al. [3]. It also contained a pre-filled template of operative findings for each of the commonly performed Oral and Maxillofacial surgical procedures in this Department. In this newly introduced proforma, the surgeon only had to make minor alterations in the operation notes on a Microsoft Word Document to accurately mirror the

Table 1 Operation Notes standard criteria as set by the Royal College of Surgeons of England

Patient name and hospital number
Date and time
Elective/emergency
Name of the operating surgeon
Name of the assistant
Name of the anesthetist
Diagnosis
Operation procedure name (in full)
Incision
Operative findings with details of any problems/complications
Any extra procedure performed and the reason why it was performed
Identification of prosthesis/implants
Details of closure technique
Detailed postoperative instructions
Signature

situation encountered. A print out was immediately taken and attached to patient case sheet before post-operative transfer to the ward (Fig. 1)

- (b) Further, a picture of the midface and mandible was made available on an A4 paper in which the surgeon could diagrammatically represent the procedure performed with details of implants placed, if any. Implant manufacturer, type of plate used, number of screws with length and diameter and slot nature were recorded in the notes (Fig. 2)
- (c) Maxillofacial surgery specific consent forms that contained procedure specific complication scenarios. These consent forms would also ensure that no abbreviations were used inadvertently.

After a period of 6 months, a 2nd audit of 50 random operation notes was performed using the same method as in the 1st Audit cycle. The 2nd Audit cycle showed a clear improvement in documentation in almost all criteria ranging from 97 to 100 %. The mean percentage of data point inclusion in 1st audit was 84.6 % that improved to 98.4 % in the 2nd audit. Assuming a Null hypothesis that there is no difference in the accuracy of documentation between the two audits, the *P* value was found to be <0.005 showing a statistical significant improvement between the two audit cycles. 100 % compliance was also seen with the additional criteria except in 6 cases where the term “ORIF” continued to be used to describe the operative procedure performed. Two consent forms were not dated and failed to mention the side of operation.

Discussion

The National Institute of Clinical Excellence (NICE) in 2002 has described “Clinical Audit” as a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the review of change. For audit to be meaningful and useful, it must be methodologically robust and have sufficient “power” to make useful observations [4]. Changing emphasis by healthcare regulators has now made it more important for both hospitals and clinicians to prove that they are doing a good job, rather than this being assumed. Performing regular audits are an essential component of any surgeon’s portfolio and demonstrate a commitment to continual improvement.

Preparing the operation note is often considered as “paperwork burden” and the busy surgeon usually delegates this “task” to the junior consultant or trainee. A questionnaire study by Borchert et al. [5] to 120 surgeons showed that while 93 % of surgical doctors agreed that teaching the “how-to-write” an operative note is important,

more than 75 % failed to receive any formal instruction. Despite accepting that “learning-by-doing” is an inappropriate way of achieving high quality operative notes, it was the most common way by which trainees learnt the skill of writing an operation note. While a few trainees read operative notes from colleagues to get an impression of the “how-to”, the quality output is largely dependent on the attitude shown to the “exact and true” documentation of intra operative findings by these colleagues.

Several methods have been used aimed at improving the quality of paper based operative notes. These include an aide-memoire attached to the operation sheet, poster/checklist in the operation theatre, or the use of an operative note proforma sheet (handwritten/computerized) [3, 6, 7]. The use of a proforma alerts the user to fill all the specified criteria with a resultant improvement in compliance to guidelines. Many large hospitals employ Health Information Systems (HIS) for a patient database that need additional funding, training and maintenance. Instead, the computerized operative note introduced in this audit is a less expensive alternative with the easy availability of a Microsoft Word Document in any computer in our hospital. The prefilled template of intra operative findings has the “routine” surgical steps already filled in, saving time for the surgeon who only has to open the particular surgical procedure word document to make minor alterations to document any particular complication/difficulty faced and accurately depict the actual procedure performed. Space constraint in documentation is not an issue here as text size can easily be adjusted to fit in the data in the finite space available. This permits accommodation of all data in the two sides of an A4 sheet of paper. The data can be easily archived in the Department computer and be made available for any future audit or research activities.

Rogers et al. [8] audited 100 consecutive operation notes and found that the vast majority of notes had no diagram to demonstrate the surgical findings. The absence of a diagram can often lead to some wastage of time when the patient is seen by another surgeon who has to read through the entire operation notes to understand the procedure performed and difficulties encountered. As post operative radiographs are not routinely ordered in our Department, the pictorial representation provides for a quick review of the pre-operative picture and hardware implanted during surgery when the patient reports for a follow-up after several months.

A popular joke refers to the inverse relationship between a doctor’s handwriting and his perceived skills and experience. Illegibility of operation notes along with the use of uncommon abbreviations can significantly weaken a surgeon’s defence in the event of litigation. Although the uses of abbreviations like ORIF, WLE are considered as universally acceptable, we have minimised these in both

DEPARTMENT OF DENTISTRY

OPERATIVE NOTES

Name: [REDACTED] Hospital No: [REDACTED] Age: [REDACTED] Sex: [REDACTED] Ward: [REDACTED] Bed no: [REDACTED]

Date of surgery: [REDACTED]

Indication for surgery: Fracture symphysis of Mandible, left displaced sub condylar #, Rt condylar head medial pole #.

Surgeon: [REDACTED] Assistants: [REDACTED]

Anaesthesia: GA with nasal intubation. Anaesthetist: [REDACTED]

Type of surgery: Elective Wound classification: Clean contaminated ASA- Class I

Procedure: Open Reduction and Internal Fixation (ORIF) Estimated blood loss: 50 ml

Duration of surgery: 3 hour 20 mins Induction: 01:00 pm Extubation: 4:30 pm.

Skin preparation: Betadine Intraoral preparation: Chlorhexidine

Preoperative Inj. Ceftriazone 2g iv and 8mg iv dexamethasone given. Local anaesthesia infiltration performed at proposed incision sites using 2% lignocaine with 1:200,000 adrenaline. Access to fracture site in symphysis of mandible was obtained through preexisting chin laceration. Mucoperiosteal flap raised and lingual curvature of symphysis of mandible exposed. Symphyseal fracture visualized between tooth 31 and 41. Fracture site was mobilized and freshened. Wound was cleaned thoroughly, irrigation done. Upper and lower Eyelets were placed and temporary Maxillomandibular fixation attempted, but could not be achieved due to condylar fractures..Bridle wiring done between 42 and 32. Fracture ends were approximated in correct anatomical relationship taking care to restore the lingual contour of symphysis of mandible to the best extent possible. Fracture fixation was done using titanium miniplates in the symphysis region. ([REDACTED] system with Cross-slots)

1) Upper border - 2mm 5 hole continuous plate - 2mm X 6 mm screws - 4 nos &

2) Lower border- 2mm 5 hole continuous plate - 2mm X 8 mm screws - 4 nos

Then a Left retromandibular incision placed and subcondylar fracture was exposed through a Transparotid dissection. No branches of facial nerve were encountered. Fractured condyle was deviated medially. Maxillomandibular fixation was released and anatomical reposition of fractured condyle was performed with some difficulty. Maxillomandibular fixation was performed and fixation of fracture was done with titanium miniplate ([REDACTED] System with Cross-slots)

3) 2mm 5 hole continuous plate - 2mm X 6 mm screws - 4 nos.

4) 2mm 3 hole plate just below sigmoid notch- 2mm X 6 mm screws - 2 nos.

Maxillomandibular fixation was released; Occlusion assessed and found to be satisfactory. Luxated tooth 21 was extracted. Erich's arch bar placed in upper and lower arch to facilitate post-operative Maxillomandibular elastics. All incisions were closed in layers using 3-0 vicryl and 3-0 mersilk. Pressure dressing placed extraorally over the mentum and inf. border of mandible and left preauricular region. Right Condylar fracture to be managed conservatively with MMF elastics.

Patient extubated and shifted to post-op ward uneventfully.

SIGNATURE OF SURGEON:

DESIGNATION:

Fig. 1 Proforma of operation note

consent forms and operation notes [9]. The other important factor rendering operating notes of very limited value is excessive brevity: a few lines mentioning that a maxillo-facial fracture has been reduced and plated, or a tumour has been excised are quite unhelpful. The authors have learned

from personal experience that information on implant manufacturer and screw head slot type is important as this has relevance if the patient is seen at another hospital and the implant needs to be removed with the correct screw-driver. Poor quality operation notes also make it difficult

Fig. 2 Diagrammatic representation of surgical procedure

for medical and nursing staff to understand what type of procedure has been performed on the patient, and what the post-operative requirements are, which can affect post-operative care. In this audit, the introduction of typed notes has made the legibility of notes a non-issue.

Conclusion

Maintaining a full and proper operative notes record is a professional responsibility of every surgeon. With increasing trend of medical litigations in India, this audit serves as an important reminder for maxillofacial surgeons to ensure compliance to the available guidelines. Operation notes are a vital part of patient care and clerical standards are a reflection of clinical standards of care. “The proof of the pudding is in the eating” and demonstrating satisfactory clinical results can only come from analysing benchmarked outcomes data through well-organized audits [4]. Junior consultants and trainees must be educated on the latest RCSE guidelines (endorsed by The British Association of Oral and Maxillofacial Surgeons) which now include additional criteria like antibiotic prophylaxis and estimated blood loss in the essential generic component of an operation note [10]. Senior consultants must regularly monitor the quality of documentation to ensure standardization of operation notes.

Our hospital aims to become the first public sector hospital to achieve accreditation status from the National Accreditation Board for Hospitals (NABH). Although

surgical audits are not mandatorily enforced by health authorities in India as yet, to the best of our knowledge, this is the first completed audit on operation notes documentation in Oral and Maxillofacial Surgery from India. While the main driver of this quality improvement initiative was the maxillofacial surgical team, an important role was also played by the hospital management in providing adequate infrastructure (computer terminals in all operation theatres and wards) that helped in electronic documentation of the operation notes. The Hospital Quality Council is trying to ensure that best practices such as WHO surgical safety checklist and Time-Outs are implemented in all operation theatres. The site verification and reading out aloud the consent to the team before the operation is part of the Time-Out pre procedure check list.

Oral and Maxillofacial Surgeons (single dental qualification) often face competition from surgical colleagues in Plastic surgery and Otorhinolaryngology in Medical schools and hospitals and such audits will help convince patients and hospital administrators that quality care is being provided by maxillofacial surgeons. Our hospital has just started with implementation of an electronic filing system and our Department has recommended that a standardised operation note document using our template be introduced for all surgical specialties.

Compliance with Ethical Standards

Conflict of interest None.

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