A 5-year audit of rhinology procedures carried out in a district general hospital

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ABSTRACT

INTRODUCTION Although there has been many studies quoting ENT and rhinology complications, there have been none looking at the complication rates of one department with a single specialist rhinologist over a 5-year period.

PATIENTS AND METHODS Over a 5-year period between 1998 and 2002, the number of operative procedures undertaken in the ENT department in a busy district general hospital was collected in a prospective manner.

RESULTS A total of 10,768 ENT procedures were undertaken in the department which comprised four consultants and associated junior staff (SpRs/SASs/SHOs); 2507 of these procedures were rhinology cases. There were 39 recorded complications following nasal surgery, giving an overall rhinology complication rate of 1.56%. This included 12 postoperative nose bleeds (0.48%), 5 cases of infection following septal surgery (0.56%), 7 cases of septal perforation (0.75%) and various minor functional endoscopic sinus surgery (FESS) complications (2.17%). These figures are either below or within the quoted literature rates. There were no major complications or deaths recorded following nasal surgery.

CONCLUSIONS These results compare favourably with those of other studies.

KEYWORDS

Audit – Rhinology – District general hospital

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Although there have been several studies auditing ENT procedures and their complications,^{1–3} there have been none in the literature involving a single ENT department monitored prospectively over a 5-year period. We looked initially at the total number of procedures undertaken within the ENT department over a 5-year period and then, more specifically, at the number of procedures in rhinology, which were mostly undertaken by one specialist surgeon over this period. The information was collected prospectively by one of the authors (MI).

Patients and Methods

Information on the number and type of procedures was collected directly from the theatre log-books on a regular monthly basis. The junior doctors on the ward recorded complications as the patients were re-admitted or reviewed. Further complications were also noted by the ENT consultants and SpRs in the out-patient clinic during routine follow-up and forwarded to data co-ordinator (MI). All this information was then presented at the monthly academic day and stored on a database. The total number of procedures and associated complications were recorded.

We categorised our complications into major, intermediate and minor.² This follows the method of classifying complications described in a study undertaken by The Royal College of Surgeons of England in 1992, which looked at nation-wide complications in ENT surgery (Table 1).

We looked specifically at the postnasal surgery bleed rate, septal surgery infection rate, septal perforation rate

Table 1 Classification of complications

Severity	Classification
Major	Life-threatening and/or causes permanent disability
Intermediate	Delay to healing and/or delay to discharge and/or requires discharge treatment
Minor	No delay to discharge and requires no discharge treatment

and minor functional endoscopic sinus surgery (FESS) complications, as well as general/non-specific complications involving rhinology patients. The data collected were then analysed by a statistician; the main statistic reported for each category is the percentage. In addition, to provide a measure of the accuracy with which the percentage can be estimated in each category, the 95% confidence interval (CI) is given. The 95% CI can be taken as an estimate of the percentages between which any other equivalent sample is likely to fall. Where comparisons are made between groups, an appropriate χ^2 comparison is used.

Results

ENT complications

A total of 10,768 ENT procedures were undertaken on 8114 patients in our department over 5 years. This included all head and neck, otology and rhinology procedures. From these 10,768 procedures there were a total of 236 complications (including 3 deaths) giving an overall complication rate of 2.2% (95% CI 1.9–2.5%). A summary of these complications can be seen in Figure 1.

This compares favourably with the overall national complication rate for ENT which varies between 5.7–7% per consultant (depending on whether only the most severe complication per patient is counted or all complications).² This national study (carried out by The Royal College of Surgeons of England in 1992) showed 174 complications reported by 42 consultants for the month of November 1992. These figures were then extrapolated for the entire year. Of these complications, 12% were major, 62.6% were intermediate and 25.3% were minor. There was no statistical difference between the rate of major, intermediate and minor complications in our department and the national data (χ^2 4.7; df 2; $P < 0.05$).

Rhinology complications

A total of 2507 rhinology cases were undertaken during this 5-year period. This approximates to 500 cases per year or 10

per week in a unit with 2 major rhinology lists per week, equivalent to 5 cases per list (assuming that all cases were performed on those lists). This accounted for 23.3% of the workload overall. Of the total 236 complications, 39 were related to rhinology procedures. Thus, the rhinology complication rate was 1.56% (95% CI 1.1–2.0%). This was significantly below our overall ENT complication rate of 2.2% (χ^2 4.06; df 1; $P < 0.05$) as shown in Figure 2. These 39 rhinology complications are listed in Table 2.

Postoperative bleed rate

There were 12 reported postoperative bleed cases from 2507 rhinology procedures (0.48%; 95% CI 0.2–0.8%). These were further classified into post-turbinate surgery, which included all different turbinate procedures, (3 from 315 procedures; 0.95%; 95% CI 0.0–2.0%) and other nasal surgery bleed rate (9 from 2192 procedures; 0.41%; 95% CI 0.14–0.7%). This is comparable to a quoted turbinectomy bleed rate of 4–25%.^{1,10,11,12} Dawes¹² reported an overall bleed rate of 8.9% following turbinectomy surgery, where only 3% of patients required active treatment. In another study, bleed rates of 2–7% have been quoted for excessive bleeding post nasal surgery (which included turbinate surgery).⁶

Table 2 Total rhinology complications

Postoperative bleeding	12
Infection/facial swelling following FESS	10
Post septal surgery perforation	7
Post septoplasty infection	5
Other (dental numbness, adhesions)	5
Total	39

Table 3 All rhinological procedures performed that could lead to septal perforation

Procedure	n
Septoplasty	613
Septorhinoplasty (SRP)	201
Cautery for epistaxis	81
External rhinoplasty/SRP	16
Rhinoplasty	15
Drainage of septal haematoma	4
I&D septal abscess	2
Total	932

Post septoplasty infection and adhesion rate

Of 840 patients who underwent septal surgery only 5 patients were found to have postoperative infections (0.6%; 95% CI 0.08–1.12%). This is lower than the quoted rate in the literature (2.3–2.7%).⁶ Only 1 patient was found to have an adhesion (0.1%; 95% CI 0.0–0.35%), but these may well have been under-reported.

Post septal surgery perforation rate

We looked at all performed procedures that could result in septal perforation postoperatively (Table 3). In our department, 7 patients were found to have developed septal perforations following these procedures (0.75%; 95% CI 0.2–1.3%). This compares with quoted rates of 5.4%,⁹ 5.1%,⁵ 3–24.5%,⁶ and 2.1%.⁷ We note that rhinoplasty patients were reviewed at 6 weeks and 6 months. Septoplasty was only seen once at 6 weeks and discharged as well, so late presentation of septal perforations may have been missed and under-reported.

Post functional endoscopic sinus surgery and complications

Functional endoscopic sinus surgery and endoscopic surgery were undertaken for a wide range of procedures. This included functional endoscopic sinus surgery with middle meatal antrostomies and/or sphenoidotomy, and/or frontal recess surgery. These procedures were for nasal polyposis, fungal sinusitis, mucocoeles and peri-orbital abscesses. Endoscopic surgery was also performed for limited inverted papilloma extending into the ethmoids/medial antrum/sphenoid with lateral rhinotomy for more extensive disease. Lateral rhinotomy was also done for extensive anterior septal papilloma with split skin grafting. Endoscopic sphenopalatine artery ligation for refractory epistaxis and endoscopic dacrocystorhinostomy. Septorhinoplasty to include augmentation, reduction, revision

and functional cases plus external approach for septal perforation repair using auricular cartilage interposition grafting. Exclusions would be major sinus malignancy referred to regional centre (Oxford) for craniofacial resection or maxillectomy, juvenile angiofibroma, *etc.*

Ten patients were found to have post functional endoscopic sinus surgery infection or facial swelling from 461 procedures (2.17%; 95% CI 0.84–3.5%) over the 5-year period. No serious complications such as CSF rhinorrhea, orbital damage or meningitis were reported. This is comparable to a quoted rate of 1.41%,⁵ from a study undertaken by The Royal College of Surgeons of England in 1994, and a Dutch study⁴ on endoscopic sinus surgery quoting rates of 4.2% for minor complications and 0.3% for serious complications. A French study⁸ further quoted rates of 2.2% for major and 13.4% for minor complications.

Discussion

In this audit, we found an overall rhinology complication rate of 1.56%, a figure lower than the quoted national rates. No serious complications or deaths were reported as a result of rhinological procedures during the period of this review.

Although there have been many studies quoting ENT and rhinology complications,^{1–9} there have been none looking at the complication rates of one department with a single specialist rhinologist over a 5-year period with the information collected in a prospective manner. From this study, we can conclude that, in the hands of a specialist surgeon in a DGH, rhinological procedures are safe surgical procedures with few complications. The data were collected in a prospective manner and it is our policy to follow-up all patients who have had nasal surgery. However, the authors acknowledge that there may be some under-reporting of complications, that not all patients will return to the ENT department with their complications and may present to other hospitals acutely, or at a later date. Although difficult, liaising directly with GPs may improve this aspect of data collection, as could telephone or postal surveys.

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Annals R Coll Surg Engl 2007; **89**(6); 648 [September issue].

In the following case report the 2nd author Matthew Oliver was omitted. The correct authorship is given below:

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