

## An Audit of Endoscopic Sinus Surgery at a Tertiary Hospital in Tanzania

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### Abstract

**Background:** Being a frequently used approach by otorhinolaryngologists, Endoscopic sinus surgery (ESS) has been useful in the surgical management of different sinonasal conditions in this era. Although ESS is most commonly performed for inflammatory and infectious sinus diseases since its introduction in the 1960s by Prof. Messserklinger and Wigand, the current advancement in instrumentation has led to an increase in its indications. This study therefore aimed at auditing the ESS done at a tertiary hospital in our settings.

**Methodology:** This was a retrospective descriptive cross-sectional study which was conducted at Muhimbili National Hospital. It involved all patients who underwent ESS in the department of otorhinolaryngology. Information was extracted from patients' files, ledger, and admission books. The obtained data were analyzed using a statistical package for social sciences (SPSS) version 22. Descriptive statistics were performed to present the frequency distribution of the demographic characteristics, indications for ESS, and mean for the length of hospital stay.

**Results:** Out of 1261 surgeries done during the study period, 6.7% (84/1261) were endoscopic sinus surgeries. Of patients who underwent ESS, an almost equal proportion of males and females was found and ages ranged from 8 to 71 years with a mean age of  $32.2 \pm 16.9$  years. The commonest indication for ESS was sinonasal polyposis at 50.0% (42/84) followed by chronic rhinosinusitis at 20.4% (17/84). The majority of patients 52.4% (44/84) had a hospital stay of 1-3 days. The mean length of postoperative hospital stay following ESS in this study was found to be 2.8 days.

**Conclusion:** Endoscopic sinus surgeries accounted for 6.7% of all surgeries with sinonasal polyposis being the commonest indication and the estimated mean length of postoperative hospital stay being 3 days.

**Keywords:** Endoscopic Sinus Surgery, Chronic Sinusitis, Indications for ESS.

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## **Introduction**

Endoscopic sinus surgery (ESS) has been a frequently used approach by otorhinolaryngologists and has been useful in the surgical management of different sinonasal conditions in this era.<sup>[1]</sup> Prior advent of ESS, open surgery predominated despite its pitfalls such as increased morbidity to patients and cosmetic implications. Due to frequent failures of Caldwell-Luc surgery, the morbidity of frontal sinus osteoplasty, and difficulties of performing headlight intranasal ethmoidectomy, such encountered challenges led to a strong rationale for the improvement of surgical techniques for chronic sinusitis.<sup>[2]</sup> In 1903 Hirschman visualized endoscopically the nasal cavity and maxillary sinus via a tooth socket by using a modified Nitzcystoscope. ESS was then introduced by Prof. Messerklinger and Wigand in the 1960s and later on, it was popularized in Europe and North America by Stammberger and Kennedy respectively.<sup>[2,3]</sup> Kennedy studied the pathophysiology of sinusitis and came to discover that, the disease was due to blockage of the osteo meatal unit (OMU) which is the key area for the proper drainage of the sinuses hence once this obstruction is removed the mucosal changes that occurred in the sinuses resolve and ventilation is restored. He then coined the term function endoscopic sinus surgery (FESS) in 1985.<sup>[1-3]</sup> FESS is hence referred to as the removal of tissue obstructing the Osteo-Matal Complex (OMC) and the facilitation of drainage while conserving the normal non-obstructing anatomy and mucous membrane.<sup>[4,5]</sup>

Although ESS is most commonly performed for inflammatory and infectious sinus diseases, the current advancement in instrumentation has led to an increase in the indications for ESS.<sup>[2]</sup> The most common indications for ESS are as follows; Chronic sinusitis refractory to medical treatment, recurrent sinusitis, nasal polyps, antrochoanal polyp, sinus mucocele, resection of selected tumours, cerebrospinal fluid leak closure, orbital decompression in graves ophthalmopathy, optic nerve decompression, dacryocystorhinostomy, foreign body removal from sinuses and control of epistaxis.<sup>[1,2,4-25]</sup> Aim of this study was thus to audit ESS at the largest tertiary hospital in our settings.

## **Materials and methods**

### **Study design**

This was a hospital-based retrospective cross-sectional study.

### **Study population and duration**

The study involved all patients who underwent ESS in the Department of Otorhinolaryngology (ORL) at Muhimbili National Hospital for a period of one year from August 2017 to August 2018.

### **Data collection method and analysis**

Data was collected using data collecting sheets from ledger books, discharge summaries, and patient files. Information such as age and sex, indications, and length of postoperative hospital stay were collected. Obtained data were coded and then entered into a computer database. It was cleaned, verified, and analyzed using a statistical package for social sciences (SPSS) version 22.

The proportion of ESS procedures was obtained by calculating the ratio of the number of patients who underwent ESS to overall surgeries done in the ORL department in 12 months. Indications for ESS were obtained by running the frequency of each indication and the length of postoperative hospital stay was obtained by finding the mean length of hospitalization in days.

### **Ethical clearance**

Ethical clearance was obtained from the Research and Publication Committee of Muhimbili University of Health and Allied Sciences. Permission to conduct the study was sought from the Training, Research, and Consultancy unit of Muhimbili National Hospital. The information obtained was kept confidential as no names were recorded.

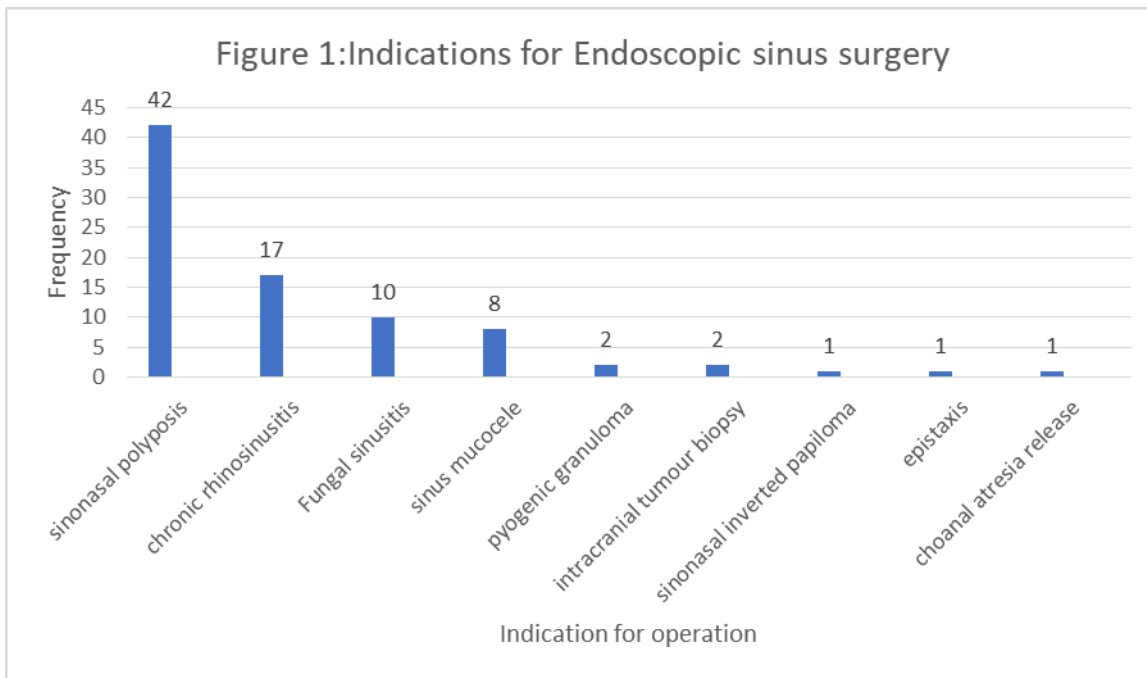
**Results**

Out of 1261 surgeries done during the study period, 6.7% (84/1261) were endoscopic sinus surgeries (ESS). Of patients who underwent ESS, an almost equal proportion of males and females was found (male to female ratio being 1.04:1) and ages ranged from 8 to 71 years with a mean age of 32.2 ± 16.9 years. The age group of 16 – 25 years had the highest proportion accounting for 26.2% (22/84) of the cases, with a slight female preponderance. (Table 1)

**Table 1:** Age and sex distribution of patients who underwent ESS.

AGE GROUP (YEARS)	SEX		TOTAL (%)
	MALE (%)	FEMALE (%)	
≤15	8 (57.1)	6(42.9)	14(16.7)
16-25	10(45.5)	12(54.5)	22(26.2)
26-35	7(41.2)	10(58.8)	17(20.2)
36-45	6(40.0)	9(60.0)	15(17.9)
46-55	3(50.0)	3(50.0)	6(7.1)
56-65	5(71.4)	2(28.6)	7(8.3)
66-75	2(66.7)	1(33.3)	3(3.6)
<b>TOTAL</b>	<b>41(48.8)</b>	<b>43(51.2)</b>	<b>84(100)</b>

The commonest indication for ESS in this study was sinonasal polyposis 50.0 % (42/84) followed by chronic rhinosinusitis 20.2 % (17/84) while the least indications were excision of sinonasal inverted papilloma, control of epistaxis and choanal atresia release each contributing 1.2 % (1/84).



**(Figure 1)**

The majority of patients 52.4% (44/84) had a hospital stay of 3 days and below and a few 6% (5/84) had more than 6 days hospital stay after operation. The mean length of postoperative hospital stay following ESS in this study was found to be 2.8 days with days ranging from 1 to 7 days.

**Table 2:** Length of hospital stay postoperatively

LENGTH OF HOSPITAL STAY (DAYS)	FREQUENCY (%)
1 to 3 days	44 (52.4)
4 to 6 days	35(41.7)
7 days	5 (6.0)
<b>Total</b>	<b>84(100)</b>

### Discussion

Before the adaptation of the endoscopic approach to sinonasal pathologies, they were managed by open surgery which had its pitfalls, including cosmetic issues. Currently, with advancements in instrumentation, the indications for endoscopic sinus surgeries have increased. [2,7]

In this study, a total of 1261 surgeries were performed in the ORL department where ESS accounted for 6.7 % of all surgeries with an almost equal proportion of females and males. The mean age is 32 years. The proportion of ESS done in our setting for 12 months was higher compared to several other studies whereby 94 ESS were performed over 26 months in Nepal,<sup>[7]</sup> 78 ESS were performed over 36 months in Iraq,<sup>[3]</sup> and 69 ESS were performed over 17 months in China.<sup>[22]</sup> The almost equal proportion of males and females in our study appears to be different from what was observed in Nepal, China, and Iraq where males predominated<sup>[3,7,22]</sup> but the study that was conducted in Iraq had a mean age of 32 years similar to our study findings.<sup>[3]</sup> The commonest indication for ESS in our study was sinonasal polyposis where ethmoidal polyps predominated compared to antrochoanal polyps, 30 and 12 respectively followed by chronic sinusitis. These findings are congruent with those from other studies which also found nasal polyposis to be the major indication for ESS.<sup>[3,4,9,12,15,17,18,20,22,26,27]</sup> Other indications for ESS included fungal sinusitis, sinus mucocele, pyogenic granuloma, intracranial tumour biopsy and the least were sinonasal inverted papilloma, epistaxis, and choanal atresia release. The least indication such as inverted papilloma appears consistent with the observed findings from the study that was done in Nepal.<sup>[7]</sup>

Moreover, the majority of patients had a hospital stay of 1 to 3 days followed by 4- 6 days stay and few had a hospital stay of 7 days. The mean length of postoperative hospital stay following ESS was found to be 2.8 days. Such findings appear to be different from those depicted in other countries where the mean length of postoperative hospital stay was estimated to be 2.3 days. The reason for the existing differences may be the indications for surgery.<sup>[7,16,]</sup>

### Conclusion

Though endoscopic surgeries including ESS in this developing country seem not to be one the routine surgeries because of lack of expertise ESS accounted for 6.7% of all surgeries done in the Otorhinolaryngology Department of this tertiary hospital and sinonasal polyposis was found to be the commonest indication for ESS.

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