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### RESEARCH ARTICLE

#### A RETROSPECTIVE REVIEW OF OTORHINOLARYNGOLOGY, AND HEAD AND NECK DAY CASE SURGERY READMISSION RATES AND COMPLICATIONS.

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#### Abstract

**Objective:** Day case surgery is now an integral part of otolaryngology and has low readmission rates worldwide. Strict guidelines for day case surgeries have been developed to meet the demands of governments and the public. However, there are limited studies in Saudi Arabia regarding this day case surgeries. The aim of our study was thus to fill this gap and to evaluate readmission rates for otorhinolaryngology, and head and neck day case surgeries in Jeddah, Saudi Arabia.

**Methods:** We conducted a retrospective study on 2,944 patients who had undergone otorhinolaryngology, or head and neck day case surgeries at in King Fahad Armed Forces Hospital in Jeddah, Saudi Arabia between January 2011 and February 2016. Data regarding date of first admission, date of the procedure, type of procedure, date of readmission, cause of readmission, and type of management used were gathered.

**Results:** The readmission rate in our study was 3.2% (94/2,944 patients). The most common procedure was adenotonsillectomy (39.9%, 1,176/2,944 patients). Adenotonsillectomy also has the highest readmission rate (44.7%, 42/94 patients). Conservative (paracetamol and antibiotics) management was the most common type of management used in readmitted patients that had undergone adenotonsillectomy (70% of patients, 66/94).

**Conclusion:** Based on our results, otorhinolaryngology, and head and neck day case surgeries can be safely performed, as long as the clinicians strictly adhere to ear, nose, and throat day case guidelines, the day case anaesthesia protocol, and guidelines from day care nurses.

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#### Introduction:-

Day case surgery has gained wide popularity. It was developed to meet governmental and public demand and to shorten the length of hospitalization and admission costs. In addition, day case surgery helps to avoid the risk of nosocomial infections [1-6]. In 1990, The Audit Commission for Local Authorities and the National Health Service identified 20 suitable procedures that may be used to perform day case surgery [7]. In 2001, the above group found that there is potential for further expansion of the use of day case surgery [8]. Ear, nose, and throat (ENT) day case surgeries have become more feasible, and there has been an emphasis on carrying out more ENT day case surgeries

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[9,10]. The rise in the popularity of day case surgeries has led to several studies aimed at quantifying post-operative risks and evaluating recovery from anaesthesia following day case surgeries [11]. ENT day case surgeries have had re-admission rates well within those recommended by various guidelines published by medical organizations (0.5%, 1.8%, 2–3%, and 4%) [12-15]. The low rates of postoperative complication following ENT day case surgeries may be related to careful selection of patients, adherence to strict aseptic guidelines for the theatre and the surgical instruments, and avoidance of new surgical methods. There are currently limited studies regarding re-admission rates following day case ENT procedures in the Kingdom of Saudi Arabia (KSA). We aimed to fill this gap in knowledge by performing a retrospective review of re-admission rates following ENT day case surgeries in Jeddah.

## **Methodology:-**

### **Patients:-**

A retrospective study was designed to review and analyse ENT day case surgeries at King Fahad Armed Forces Hospital (KFAFH) in Jeddah, KSA, between January 2011 and February 2016. The information gathered included date of first admission, date of procedure, type of procedure, date of readmission, cause of readmission, and type of management. The inclusion criteria were as follows: all patients for whom otorhinolaryngology day case surgery was indicated, and who were fit to undergo surgery according to American Society of Anaesthesiologists (grades II and I). The Exclusion criterion was as follows: any patient unfit for general anaesthesia (American Society of Anaesthesiologists grade III or higher) [16]. Ethical approval for this study was obtained from the Research and Ethical Committee at King Fahad Armed Forces Hospital (Jeddah Reference Ethical Number: KFAFH 142).

### **Surgical Procedure:-**

Standard surgical techniques were used. The surgeries included in the study were adenoidectomy, adenotonsillectomy, excisional biopsy, keloid removal, myringotomy combined with grommet insertion, nasal bone reduction, nasopharyngeal biopsy, septoplasty, tonsillectomy, and tympanoplasty. The discharge criteria were as follows: stable vital signs for at least one hour; adequate pain control; no vomiting or vertigo; minimum bleeding or wound discharge; orientation to person, place, and time; the ability to take in fluids, and the ability to void. The follow-up criteria were as follows: wound, dressing, and packs checked 48 hours postoperatively; pack removed after 48 hours; sutures and dressing removed on the 5<sup>th</sup> or 6<sup>th</sup> postoperative day; 72 hours of rest following the procedure; and review, if required. Informed written consent was obtained from all patients. Prophylactic broad-spectrum antibiotics were used in all cases for 7-10 days. Symptomatic treatment was carried out, as previously described [17].

### **Complications and Management:-**

Reasons of readmission included bleeding, fever, infection, cough, stridor, dehydration and pain, and pain only. The following treatments were used to manage the complications: conservative management using cauterization by silver nitrates; operative management using cauterization by diathermy; conservative management using paracetamol and antibiotics; conservative management using paracetamol; fresh frozen plasma (FFP), packed red blood cells (PRBC), and antibiotics; and antibiotics and observation only.

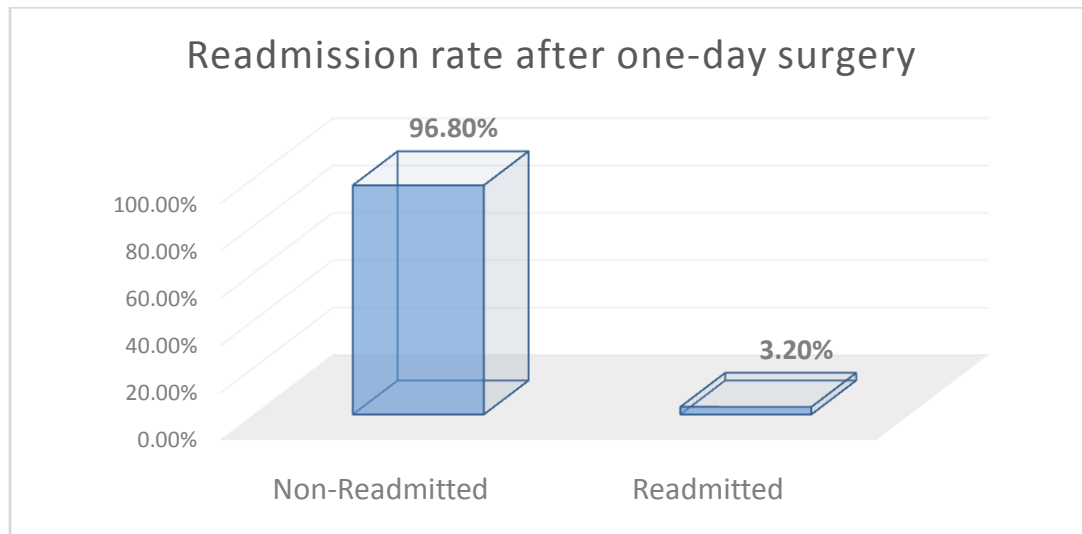
### **Statistical Analysis:-**

Data were entered, coded, and analysed using the statistical package for social science (SPSS) version 22. Simple descriptive statistics were reported as proportions for qualitative variables, such as the percentages of readmitted and non-readmitted patients who had undergone one-day surgeries. We also analysed the descriptions of the complications experienced by the patients who were readmitted after and the treatments used to manage these complications.

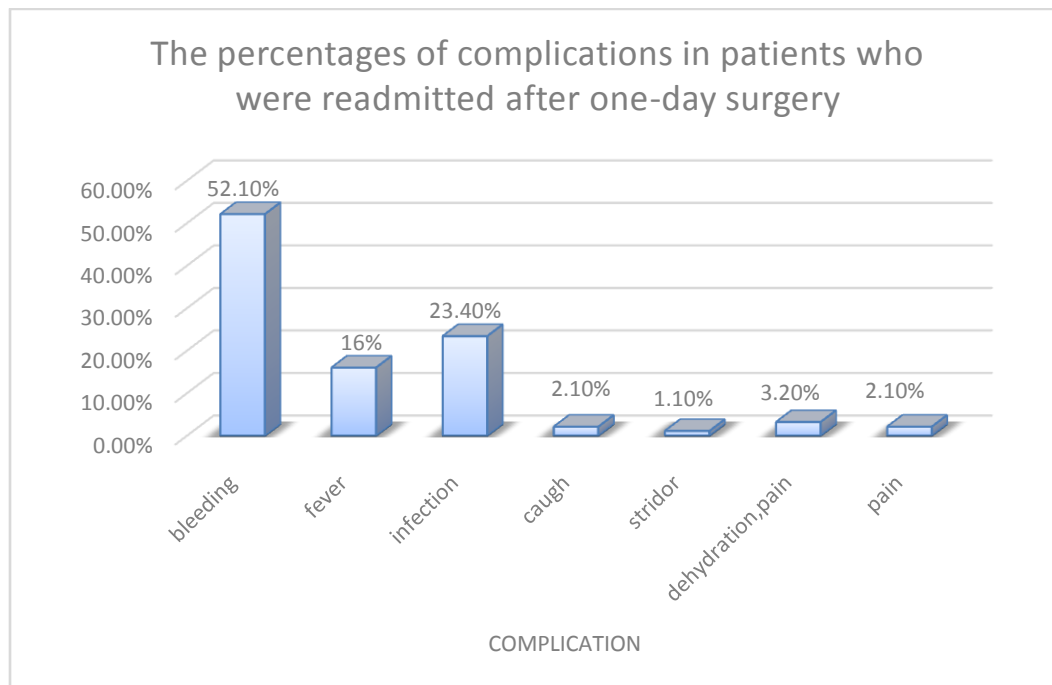
## **Results:-**

Two-thousand and nine-hundred and ninety-four procedures were performed during the study period. Ninety-four patients (3.2%) were readmitted, while 2,850 patients (96.8%) were not readmitted (Figure 1). Table 1 shows the numbers of the different types of procedures performed during the study period. The most common procedure performed was adenotonsillectomy (1,176 patients, 39.9%). This procedure was followed by adenoidectomy (712 patients, 24.2%), tonsillectomy (705 patients, 23.9%), myringotomy combined with grommet insertion (189 patients, 6.4%), septoplasty (76 patients, 2.6%), nasal bone reduction (63 patients, 2.1%), tympanoplasty (12 patients, 0.4%), nasopharyngeal biopsy (6 patients, 0.2%), keloid removal (3 patients, 0.1%), and excisional biopsy (2 patients, 0.1%). Ninety-four patients were readmitted after one-day surgery. Of these patients, 42 (44.7%) had undergone

adenotonsillectomy, 37 (39.4%) had tonsillectomies, 9 (9.6%) had adenoidectomies, 4 (4.3%) had tympanoplasties, 1 (1.1%) had a septoplasty, and one (1.1%) had undergone a nasal bone reduction procedure. No patients that had undergone myringotomy combined with grommet insertion, nasopharyngeal biopsy, keloid removal, or excisional biopsy procedures were readmitted. Table 2 indicates that 66 patients (70.2%) were treated with paracetamol and antibiotics; 16 patients (17%) were treated with cauterization by diathermy; 7 patients (7.4%) were treated with cauterization by silver nitrate; 2 patients (2.1%) were treated with paracetamol; 1 patient (1.1%) was treated with FFP, PRBC, and antibiotics; one patient (1.1%) was treated with antibiotics, and 1 patient (1.1%) was managed by observation. Figure 2 indicates that 49 of the readmitted patients (52.1%) had bleeding, 15 (16%) had fever, 22 (23.4%) had infections, 3 (3.2%) had dehydration and pain, 2 (2.1%) had coughs, 2 (2.1%) had pain, and 1 (1.1%) had stridor.



**Figure 1:-** Readmission rates. Our data indicate that 3.2% of the patients were readmitted, while 96.8% were not readmitted.



**Figure 2:-** Rates of complications. Our data indicate that 52.1% of the readmitted patients had bleeding, 16% had fever, 23.4% had infections, 3.2% had dehydration and pain, 2.1% had coughs, 2.1% had pain, and 1.1% had stridor.

**Table 1** showed the types and numbers of procedures performed in this study, as well as the numbers of patients undergoing each procedure who were readmitted. The most common procedure was adenotonsillectomy (39.9%) and the least common was excisional biopsy (2 procedures, 0.1%). Of the 94 patients who were readmitted one-day surgery, 42 (44.7%) had undergone adenotonsillectomy, which led to the highest rate of readmission, while the lowest rates of readmission was observed for septoplasty and nasal bone reduction (1 patient each, 1.1%). No patients who had undergone myringotomy combined with grommet insertion, nasopharyngeal biopsy, keloid removal, or excisional biopsy were readmitted.

<b>Procedure</b>				
Type of procedure	Frequency	Percentage	Frequency of readmission	Percentage
adenotonsillectomy	1176	39.9	42	44.7
adenoidectomy	712	24.2	9	9.6
tonsillectomy	705	23.9	37	39.4
myringotomy+ grommet insertion	189	6.4	0	0.0
septoplasty	76	2.6	1	1.1
nasal bone reduction	63	2.1	1	1.1
tympanoplasty	12	.4	4	4.3
nasopharyngeal biopsy	6	.2	0	0.0
keloid removal	3	.1	0	0.0
excisional biopsy	2	.1	0	0.0
Total	2944	100.0	94	100

**Table 2:-** Shows that paracetamol and antibiotics were used to treat 66 patients (70.2%), while one patient (1.1%) was managed using FFP, PRBC, and antibiotics. Similarly, one patient was managed using antibiotics and one was managed by observation.

<b>Management</b>		
Type of management	Frequency	Percentage
Conservative (paracetamol and antibiotics )	66	70.2
Operative (cauterization by diathermy)	16	17.0
Conservative (cauterization by silver nitrates)	7	7.4
Conservative (paracetamol)	2	2.1
FFP, PRBC, and antibiotics	1	1.1
Antibiotics	1	1.1
Observation	1	1.1
Total	94	100.0

## Discussion:-

Recent studies have advocated the use of ENT day case surgeries [9]. Our study was limited by the fact that it was conducted in Jeddah in Saudi Arabia, and is thus not readily applicable to the general population. Another study on 312 patients who had undergone nasal day case procedures found that the readmission rate was 2.88%, and that the leading cause for readmission was epistaxis (28.9%) [18]. The procedures carried out in our study had readmission rates below those recommended by the guidelines of the Royal College of Surgeons of England [14]. Another study of 1,642 operations performed over a 12-month period (1997-1998) categorized the operations based on the site of surgery, as follows: ear, nose and sinuses, throat and neck, and miscellaneous. In that study, 29 patients (1.8%) were re-admitted unexpectedly for overnight observation. Four of the patients were admitted due to either an anaesthetist's or a surgeon's request, or for social reasons. One patient was readmitted due to a reactionary haemorrhage. The remaining 24 cases were also readmitted due to haemorrhage, as most of them had undergone septoplasty. No patients were admitted due to complaints of pain. The key risk factor for post-operative haemorrhage may be the length of time that the pack is kept *in situ* [13]. In another study, the overall post-operative readmission rate was 0.94 %. The readmission rate for tympanoplasty was 0.62%. All patients who had undergone tympanoplasty were readmitted due to pain due to a tight bandage. The incidence of readmission due to pain was subsequently decreased using bandages with adequate pressure [19]. A study on 2,538 elective operations indicated that the readmission rate for tonsillectomy was 2.6% in adults and 3.3% in children. The standard practice and protocols used by the authors of the above study are based on a number of studies published over the last 20 years [20, 21]. The authors thus use

cold-steel dissections with re-usable instruments in adults and coblation tonsillectomy in children. The patients are discharged 7 hours postoperatively. Only one adult and no children had to undergo an additional surgical operation. Children were admitted for pain control, nausea, and an unwillingness to eat or drink [9]. The National Prospective Tonsillectomy Audit [22] indicated that 'hot' techniques are potentially more hazardous than cold-steel dissection, consistent with the above results. In another study of 300 paediatric cases carried out over 8 months (October 2001), 6 cases developed haemorrhage after 3 days, although conservative management was the only treatment required (bed rest, analgesics, antibiotics, and fluids) [22].

### Conclusion:-

The standard practice and protocols used in the above cases are based on a number of studies published over the last 20 years, which have proven that day case surgeries are safe, although there have been limited studies in Saudi Arabia. The low readmission rates in our study indicate that day case surgeries are safe and that satisfaction following a wide variety of ENT procedures is high. The above results are due to careful patient selection and the use of meticulous operative techniques. Effective day case surgeries require the identification of suitable patients, effective pre-surgery assessment, and strict adherence to the guidelines of day case anaesthesia protocols and those of day care nurses. The findings of this retrospective study indicate that more strict adherence to the guidelines for ENT day case surgeries is required. Our study is also valuable, as there are limited similar studies on ENT day case surgeries in Saudi Arabia.

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