

Tonsillectomy and the Study of General Complications in Addition to the Assessment of Bleeding and Quality of Life for Patients in Iraq

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Abstract: Background: Removal of the palatine tonsils is a frequently performed operation in patients with chronic tonsillitis. The proportion of tonsillectomy in otorhinolaryngological practice is up to 10% or more of all surgical interventions. **Objective:** This study aims to analyze Tonsillectomy and the study of general complications in addition to the assessment of bleeding and quality of life for patients in Iraq. **Patients and method:** This study was conducted by making a cross-sectional study of patients with tonsillectomy, where this study focused on the analysis of Tonsillectomy and the study of general complications in addition to the assessment of bleeding and quality of life for patients in Iraq. This study was applied to patients between the ages of younger than 20 to older than 35 years of age, for both sexes, male and female, in different hospitals in Iraq for a study that ranged from the 7th of July 2021 to the 14th of April 2022. This study examined and analyzed all the data collected through the use of the program SPSS. The study data were divided into two groups, where the first group represented Bleeder patients, which included 72 patients, and the second group included non-bleeder patients, which included 64 patients. **Discussion:** Although tonsillectomy is a very common surgical procedure in otolaryngology practice, many efforts have been made to reduce its associated morbidity and mortality, especially in relation to post-tonsillectomy hemorrhage; because this analysis was retrospective in nature, we did not include potential intraoperative risk factors for post-tonsillectomy hemorrhages, such as the presence of fibrosis and the volume of intraoperative bleeding, because these data were inconsistently accessible in the operating reports. The risk of post-tonsillectomy bleeding was considerably higher among individuals having a history of chronic tonsillitis, older patients, major intraoperative blood loss, and postoperative hypertension. **Conclusion:** Post-tonsillectomy bleeding is a significant consequence that frequently necessitates intraoperative hemorrhage management and may necessitate blood transfusions, especially in individuals with a history of chronic tonsillitis. Age, Hematocrit, Diabetes, and Hypertension were shown in our study to be risk factors for post-tonsillectomy bleeding in the group of patients who bled, which led to a decline in the patient's assessments of their quality of life. The risk of post-tonsillectomy bleeding was considerably higher among individuals having a history of chronic tonsillitis, older patients, major intraoperative blood loss, and postoperative hypertension.

Keywords: Tonsillitis; BMI; type of Hemorrhage; Comorbidities; and Adenotonsillectomy surgery.

INTRODUCTION

Removal of the palatine tonsils is a frequently performed operation in patients with chronic tonsillitis. The proportion of tonsillectomy in otorhinolaryngological practice is up to 10% or more of all surgical interventions [Eurostat, 2013]. The question of the need to remove the tonsils is advisable to decide in each case individually based on the conclusion of an otorhinolaryngologist, general practitioner, and doctors of specialized specialties in the presence of concomitant diseases. Removal of the tonsils may be accompanied by postoperative primary and secondary bleeding; their frequency varies from 0.1 to 40% [Schoenstein, M. *et al.*, 2013-Paradise, J.L. *et al.*, 2015]. Bleeding is especially common with tonsillogenic complications, diseases of the blood system, and hemostasis disorders. The causes of bleeding after tonsillectomy are divided into local and general. Local causes of bleeding include anomalies in the location of blood vessels; the presence of scars and adhesions; the presence of varicose veins due to frequent inflammatory

processes; features of the surgical technique used [Eurostat, 2015].

Patients with severe comorbidities, including kidney disease, require special attention. In end-stage renal failure, a kidney transplant is performed. According to data for 2012, more than 800 kidney transplantations were performed in Russia [Bhattacharyya, N. *et al.*, 2002], which allows for increasing life expectancy, reducing the severity of pathological manifestations, improving the quality of life, facilitating the social and medical rehabilitation of patients with end-stage renal disease, and reducing the cost of treatment for this category of patients.

As the number of kidney transplants performed increases, so does the number of patients living with transplanted organs. These patients are primarily characterized by diseases caused by complications of immunosuppressive therapy [Bhattacharyya, N. *et al.*, 2002], but recipients of transplanted organs may repeatedly return to the surgical department for other reasons: for staged

treatment or for any operation not related to the previous transplantation.

Patients with transplanted kidneys should be observed by a nephrologist and undergo laboratory and instrumental studies according to the plan to increase the duration of the transplanted organ. The duration of a kidney transplant from a deceased donor is 7-10 years and from a living donor - 14-17 years. The life span of a transplanted kidney depends on the degree of compatibility, the time of dialysis therapy before transplantation, the underlying disease that led to kidney pathology, and other characteristics of the donor and recipient [Bhattacharyya, N. et al., 2002]. One common recurrent glomerulonephritis that affects renal allograft engraftment is IgA nephropathy. The rate of allograft loss in patients with IgA nephropathy and other glomerulonephritis after ten years is relatively the same [Mui, S. et al., 1998]. However, a recent study showed that the survival of patients with IgA nephropathy gradually worsened, and graft survival after 15 years was approximately 10% lower than in patients with other glomerulonephritis [Nikakhlagh, S. et al., 2012]: this is due to the fact that recurrence of IgA nephropathy in the kidney is possible. Transplant. There is evidence of a possible inhibitory effect of tonsillectomy on the progression of the renal process as a result of a decrease in damage to the glomerular cell [Pajić-Penavić, I. et al., 2013]. Elimination of foci of infection in the palatine tonsils (tonsillectomy) reduces the number of episodes of gross hematuria and sometimes reduces proteinuria and the concentration of IgA in the blood serum [Koskenkorva, T. et al., 2014; Ovesen, T. et al., 2013]. However, many studies focusing on the effectiveness of tonsillectomy have not yet reached a consistent result. Kawamura, T. et al., [Powell, H.R. et al., 2012] observed in a study evaluating the effectiveness of steroid pulse therapy and tonsillectomy in combination with steroid pulse therapy that there was no significant difference between the two treatments. However, this study has a relatively short follow-up period (1 year), which cannot be used to evaluate the efficacy of tonsillectomy in clinical practice. Yang, D. et al., [Wireklint, S. et al., 2012- MRC, 2015] demonstrated that tonsillectomy can promote faster and longer remission in patients with IgA nephropathy, and the patient was followed up for four years. [Robinson, K. et al., 1996]

Long-term immunosuppressive therapy in patients undergoing kidney transplantation can lead to the

growth of opportunistic and pathogenic microflora in the palatine tonsils, which leads to the decompensation of chronic tonsillitis and the ineffectiveness of conservative therapy [Schwentner, I. et al., 2007; Leinbach, R.F. et al., 2003]. Tonsillectomy may be indicated for patients who have undergone kidney transplantation. The otorhinolaryngologist faces difficulties in planning and conducting surgical interventions in such patients. Only joint preparation by an otorhinolaryngologist, an anesthesiologist, a nephrologist, and a patient's therapist before surgery will reduce the risk of postoperative complications [Theissing, J, 2006]. Tonsillectomy and the study of general complications in addition to the assessment of bleeding and quality of life for patients in Iraq.

PATIENTS AND METHODS

This study was conducted by making a cross-sectional study of patients with tonsillectomy, where this study focused on the analysis of Tonsillectomy and the study of general complications in addition to the assessment of bleeding and quality of life for patients in Iraq. This study was applied to patients between the ages of younger than 20 to older than 35 years of age, for both sexes, male and female, in different hospitals in Iraq for a study that ranged from the 7th of July 2021 to the 14th of April 2022). This study examined and analyzed all the data collected through the use of the program SPSS. The study data were divided into two groups, where the first group represented Bleeder patients, which included 72 patients, and the second group included non-bleeder patients, which included 64 patients.

This study started with describe the demographic data of patients, which include Age, <20, 21-34, and > 35, Gender, which have Male and Female, BMI (Kg/m²), 24-27, 28-31, 32-34, as well as Tonsillitis which include 0, 1-4, > 5, Type of surgery, Tonsillectomy alone, Adenotonsillectomy and Comorbidities which include Diabetes, Hypertension, Chronic renal disease, Smoking, Liver disease, finally Urbanicity, divided according to the distribution of patients which Iraq which have Urban, Suburban, and Rural, as well as INR, <1.2, ≥1.2 and Surgeon's experience, ENT resident, and ENT specialist that expressed in **Table 1**.

To proof that, this study presented the distribution of bleeder patients based on the type of hemorrhage, which has divided into primary and

secondary, which can be seen in **Fig.1**. To follow-up, this study was settled Distribution of bleeder patients based on post-operative hemorrhage which succussed in **Figure 2**. According to Complications, this study was investigated with patients which found complications of tonsillectomy of the bleeder and non-bleeder patients' Postoperative infection, Bleeding, Edema of the tongue, Glossopharyngeal nerve injury, and Carotid artery injury that can be shown in Table 2. Moreover, this study was examined the data where focus distributions of risk factors patients for post-tonsillectomy hemorrhage Hematocrit, >36 and <36, technical Methods, which have 'Cold' and

Electrocautery, Hemostatic method, which include Ligation, Cautery, as well as Operative time, <1 hour and 1-2 hours which presented all these details in **Table 3**. This study had Assessed of quality-life for bleeder and non-bleeder patients' Postoperative infection Age, Hematocrit, Diabetes, Hypertension, Type of surgery, Tonsillitis, and BMI, which all details are found in **Table 4**. Besides that, it was progressed to a statistical assessment of risk factors, and the existence oof bleeding in patients can be seen in **Table 5**.

RESULTS

Table 1: Baseline characteristic of patients for 136 samples

	Bleeder (N=72)	Non-bleeder (N=64)	P-value
Age			
< 20	17 (23.61%)	17 (26.56%)	
21-34	31 (43.06%)	29 (45.31%)	
> 35	24 (33.33%)	18 (28.13%)	
Gender			
Male	42 (58.33%)	38 (59.38%)	
Female	30 (41.67%)	26 (40.63%)	
BMI (Kg/m2)			
24-27	12 (16.67%)	11 (17.19%)	
28-31	24 (33.33%)	22 (34.38%)	
32-34	36 (50%)	31 (48.44%)	
Tonsillitis			
0	15 (20.83%)	13 (20.31%)	
1-4	24 (33.33%)	19 (29.69%)	
> 5	33 (45.83%)	32 (50%)	
Type of surgery			
Tonsillectomy alone	34 (47.22%)	26 (40.63%)	
Adenotonsillectomy	38 (52.78%)	38 (59.38%)	
Comorbidities			
Diabetes	15 (20.83%)	17 (26.56%)	
Hypertension	18 (25%)	11 (17.19%)	
Chronic renal disease	11 (15.28%)	14 (21.88%)	
Smoking	16 (22.22%)	17 (26.56%)	
Liver disease	12 (16.67%)	5 (7.81%)	
Urbanicity			
Urban	37 (51.39%)	34 (53.13%)	
Suburban	24 (33.33%)	21 (32.81%)	
Rural	11 (15.28%)	9 (14.06%)	
INR			
<1.2	50 (69.44%)	42 (65.63%)	
≥1.2	22 (30.56%)	22 (34.38%)	
Surgeon's experience			
ENT resident	55 (76.39%)	40 (62.5%)	
ENT specialist	17 (23.61%)	24 (37.5%)	

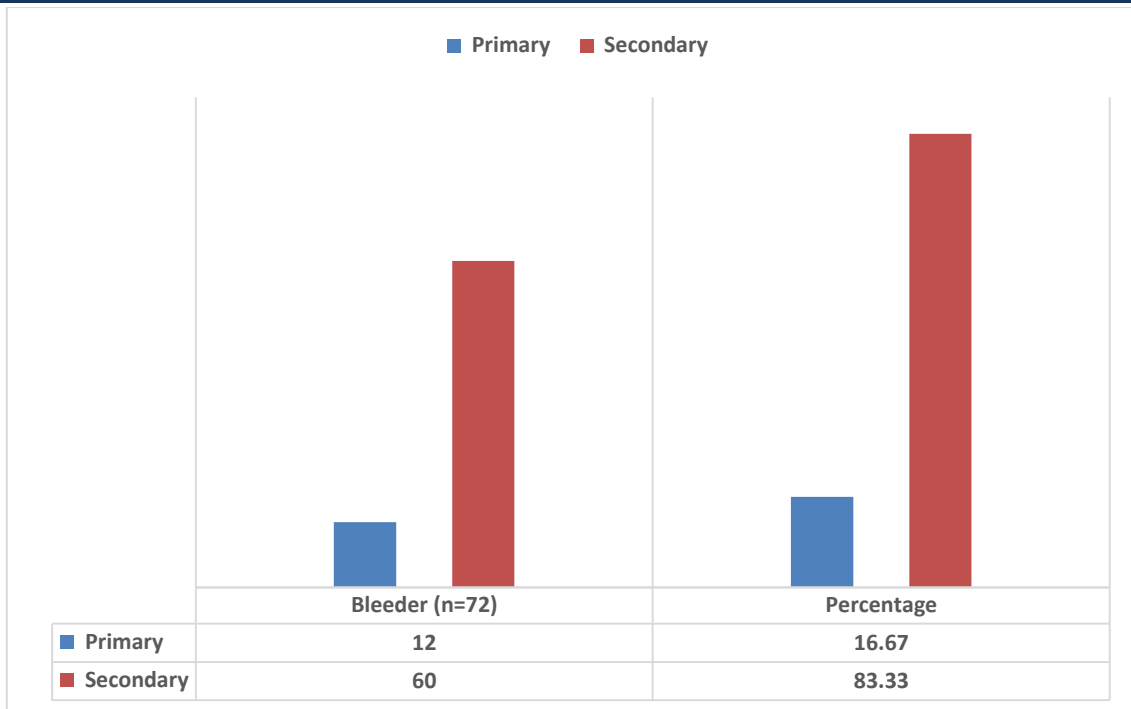


Figure 1: Distribution of bleeder patients based on the type of hemorrhage

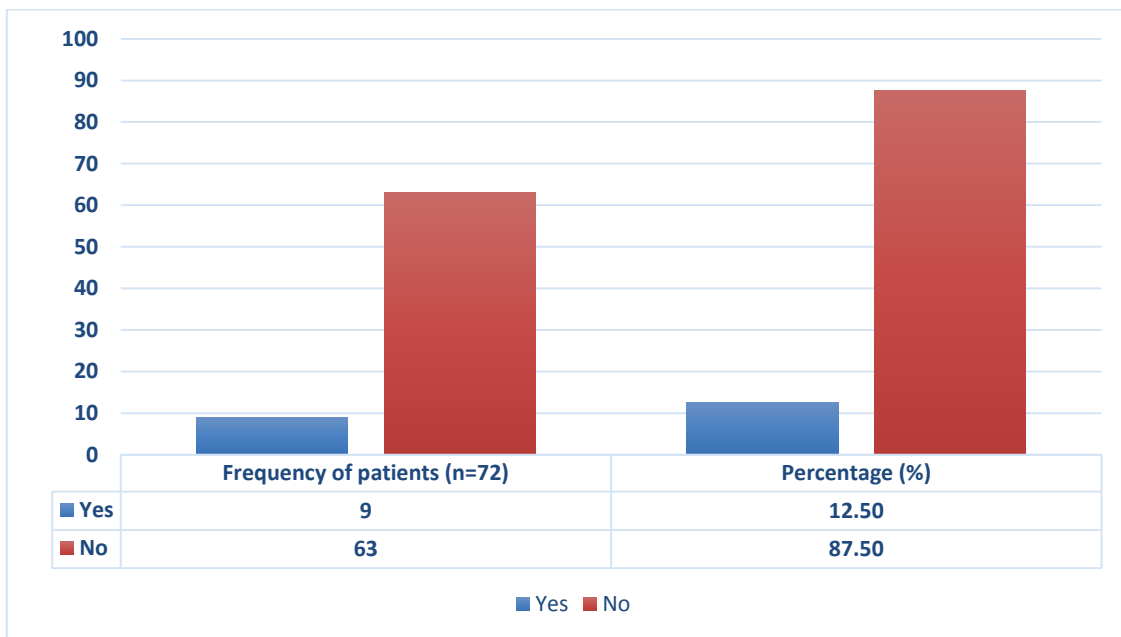


Figure 2: Distribution of bleeder patients based on a post-operative hemorrhage

Table 2: Complications of tonsillectomy of the bleeder and non-bleeder patients

Variables	Bleeder (N=72)	Non-bleeder (N=64)	P-value
Postoperative infection	4 (5.56)	2 (3.13%)	0.0475
Bleeding	8 (11.11%)	4 (6.25%)	0.0422
Edema of the tongue	6 (8.33%)	2 (3.13%)	0.0421
Glossopharyngeal nerve injury	2 (2.78%)	1 (1.56%)	0.0497
Carotid artery injury	5 (6.94%)	3 (4.69%)	0.04853

Table 3: Distributions of risk factors patients for post-tonsillectomy hemorrhage

Variables	Bleeder (N=72)	Non-bleeder (N=64)
Haematocrit		
>36	43 (59.72%)	40 (62.5%)
<36	29 (40.28%)	24 (37.5%)
Technical Methods		
'Cold'	22 (30.56%)	21 (32.81%)
Electrocautery	50 (69.44%)	43 (67.19%)
Haemostatic method		
Ligation	9 (12.5%)	7 (10.94%)
Cautery	63 (87.5%)	57 (89.06%)
Operative time		
<1 hour	67 (93.06%)	58 (90.63%)
1-2 hours	5 (6.94%)	6 (9.38%)

Table 4: Assessment of quality-life for bleeder and non-bleeder patients

Cases	Bleeder patients	Non-bleeder patients	P-value
Postoperative infection	50.22±5.4	68.18±8.4	0.0433
Age	66.17±7.7	72.82±6.22	0.0427
Haematocrit	43.22±4.0	56.73±4.4	0.0373
Diabetes	52±4.4	60±8.74	0.0455
Hypertension	60.14±1.1	67.55±3.6	0.0386
Type of surgery	62.52±3.33	74.36±5.38	0.0436
Tonsillitis	40.37±4.82	60.26±6.84	0.0355
BMI	38.88±2.7	57.53±6.22	0.0274

Table 5: Statistic assessment of risk factors and existence of bleeding in patients

	Parameters of risk factors	Bleeder patients
Age		
R correlation	1	- 0.9
Sig	1	0.5
Haematocrit		
R correlation	1	+0.8
Sig	1	0.002
Technical Methods		
R correlation	1	-0.64
Sig	1	0.42
Haemostatic method		
R correlation	1	- 0.88
Sig	1	0.0455

DISCUSSION

Although tonsillectomy is a very common surgical procedure in otolaryngology practice, much efforts have been made to reduce its associated morbidity and mortality, especially in relation to post-tonsillectomy hemorrhage, which is the post-operative complication with the highest potential to be fatal.

This can be a longer duration of chronic tonsillitis in older patients that predisposes to more tonsillar bed fibrosis and more surgical difficulties to find and follow the tonsillar dissection plan. It can also be explained by the fact that older patients may be

less compliant with postoperative liquid dietary intake and rest recommendations.

The study's findings are divided on gender's influence on postoperative hemorrhage risk. While some researches have identified a link between masculine gender and increased risk, others, like our study, have not. Regarding the impact of the surgical procedure on the risk of post-tonsillectomy hemorrhage, there is disagreement in the literature. In comparison to cold dissection, several studies indicate that bipolar dissection is linked to a greater incidence of postoperative bleeding. Other research, however, reveals no

distinction between the methods. In addition, neither the kind of hemostasis technique—bipolar electrocoagulation of the tonsillar bed—nor its combination with sutures had any effect on our post-tonsillectomy bleeding rate. Therefore, the required hemostasis should be carried out in a manner that controls intraoperative bleeding and causes the least amount of damage to the tonsillar bed and tonsillar pillars feasible, depending on the surgeon's preferences and expertise. We observed no differences in post-operative bleeding between residents and specialists in otolaryngology who conduct tonsillectomy. However, research revealed that operations done by inexperienced surgeons were more commonly linked to severe instances of postoperative bleeding, necessitating a second procedure in the operating theater under general anesthesia. INR levels should be evaluated prior to surgery since they are prognostic indicators for post-tonsillectomy bleeding. In our study, compared to tonsillectomy alone, postoperative infection is a more significant prognostic predictor of post-operative bleeding.

On the contrary hand, postoperative bleeding is not influenced by characteristics including gender, surgical method, surgeon experience, or the kind of operation. The risk of post-tonsillectomy bleeding was considerably higher among individuals having a history of chronic tonsillitis, older patients, major intraoperative blood loss, and postoperative hypertension. In this conclusion, our study found that age, complications, type of surgery, Tonsillitis, and BMI, are basic factors which cause bleeding of post-operative for bleeder patients. As well as this study shows that non-bleeder patients have more success than the bleeder patients' group in the assessment of the quality of life. Adenoidectomy performed concurrently with tonsillectomy has been found to be a predictor of post-tonsillectomy bleeding. We discovered that adenotonsillectomy carries a greater risk of postoperative hemorrhage than tonsillectomy alone. This allows us to speculate that post-tonsillectomy hemorrhaging in bleeders is more likely to be brought on by a lower intraoperative expenditure on hemostasis, either because there is a lower intraoperative blood loss or just because we are aware that postoperative hemorrhage is less common in this age group. Because this analysis was retrospective in nature, we did not include potential intraoperative risk factors for post-tonsillectomy hemorrhages, such as the presence of fibrosis and the volume of

intraoperative bleeding, because these data were inconsistently accessible in the operating reports.

CONCLUSIONS

Post-tonsillectomy bleeding is a significant consequence that frequently necessitates intraoperative hemorrhage management and may necessitate blood transfusions, especially in individuals with a history of chronic tonsillitis. Age, Hematocrit, Diabetes, and Hypertension were shown in our study to be risk factors for post-tonsillectomy bleeding in the group of patients who bled, which led to a decline in the patient's assessments of their quality of life. INR levels should be evaluated prior to surgery since they are prognostic indicators for post-tonsillectomy bleeding. In our study, compared to tonsillectomy alone, postoperative infection is a more significant prognostic predictor of post-operative bleeding. On the contrary hand, postoperative bleeding is not influenced by characteristics including gender, surgical method, surgeon experience, or the kind of operation. The risk of post-tonsillectomy bleeding was considerably higher among individuals having a history of chronic tonsillitis, older patients, major intraoperative blood loss, and postoperative hypertension. In this conclusion, our study found that age, complications, type of surgery, Tonsillitis, and BMI, are basic factors which cause bleeding of post-operative for bleeder patients. As well as this study shows that non-bleeder patients have more success than the bleeder patients' group in the assessment of the quality of life. Furthermore, it is advised that future prospective studies confirm or reject the associations found in this study and look for additional potential risk factors that might contribute to predicting post-tonsillectomy hemorrhage and, thus, detect patients susceptible for these complications. These studies should be conducted with homogeneous groups, surgeries performed by the same surgeon, and intra-operative risk factors.

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