COMPARISON BETWEEN HYDROGEN PEROXIDE, ICED PACKS AND NON AGENT PACKS IN TONSILLECTOMY HAEMOSTSIS

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ABSTRACT

Objectives: Tonsillectomy is one of the operations most frequently performed by otolaryngologists, who are in search of a technique of tonsillectomy where the operation time and operative blood loss is reduced. This study was carried out
to evaluate the effect of hydrogen peroxide 3% in comparison with iced normal saline on tonsillectomy times, blood loss during the surgery and on the number of packs used.

Methods: Analytical cross sectional study was performed on thirty patients was carried out in the Department of Otolaryngology of AL-Habbobi General Hospital,AL-Nassyria, Iraq, in the period from the 1st week of March 2010 till the last week of November 2010. Tonsillectomy was performed using hydrogen peroxide 3% as a haemostatic agent in Group A(n = 15 tonsils), while in Group B (n = 15 tonsils) iced normal saline was used where as no agent was used with the gauze pack in GroupC(n=30 tonsils).

Results: The application of pack socked with hydrogen peroxide 3% or iced saline in the tonsillar fossae reduced the operation time , the operative blood loss and also reduced the number of packs used in Group A and B in comparison with non agent method . The results were statistically significant.

Conclusion: The local application of 3% hydrogen peroxide on the tonsillar bed after tonsillectomy is beneficial to decreasing the volume of blood loss more than other applications;while no significant difference between group A and B regarding the number of packs used and duration of operation

Keywords: Tonsillectomy; Hydrogen peroxide; Haemostasis.

INTRODUCTION:

Celsus was the first person to recognize tonsillar disease and its relationship to infection and performing the first tonsillectomy in 40 A.D.[(1)]The popularity of tonsillectomy peaked in the 1930s, but after the use of antibiotics became widespread, enthusiasm for the procedure waned and its use had decreased dramatically by the1960s.The tide turned again in the 1980s, when Paradise et al demonstrated that surgery significantly improved patient outcomes compared with medical therapy.[(2)]Chronic tonsillitis is one of the most common and frequent illnesses within otolaryngology. Tonsillectomy is also one of the most frequently performed surgical procedures. The Greeks called the tonsils indurated and inflamed antiades.

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They were loosened by scraping around them and then torn out; alternatively they were picked up with little hook and excised with a scalpel. Afterwards the fossae were washed out with vinegar and painted with a medication to reduce bleeding[3] The operation becomes popular in the nineteenth century after the invention of "tonsillotome"by Physick.[4] Different techniques and instruments have been used for removal of tonsilalong with haemostasis but none of them were found satisfactory. Hydrogen peroxide has been used as a disinfectant. [5] Delivering hydrogen peroxide into wounds kills fibroblasts and occludes local microvasculature.[6],[7] It has been used for decades as an effervescent haemostatic agent in arthroplasty in orthopedics.[8]

The aim of this prospective study was to evaluate the effects of hydrogen peroxide 3% in comparison with iced normal saline on tonsillectomy time, operative blood loss and the number of packes used to achieve complete haemostasis

METHODOLOGY:

Study design: A cross sectional analytical study extended from the 1st week of March 2010 till the last week of November 2010.

Target population: Each under twelve years patient underwent tonsillectomy Tonsillectomy in all cases was performed according to the criteria approved by the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS). Inclusion criterion was chronic or recurrent tonsillitis,too big tonsils with blockage of throat, white debris on the tonsils, peri-tonsillar abscess, sleep apnea and unusual enlargement of tonsils[9]..

Place of study: Operative theater in ENT department in Al-Habboby general hospital in Al-Nasseriayh city, Iraq.

Tools of study: A form of questionnaire was prepared which was include name, age, sex, in addition to documentation of preoperative weight , total blood loss, number of packs and duration of operation for three groups; Group A(n=15 tonsils) in which hydrogen peroxide was used, Group B(n=15 tonsils)used iced normal saline, and Group C(n=30 tonsils) for which non agent was used as haemostasis tool(control group)

Statistical analysis: Analysis of variable done statistically by using computerized program-SPSS (Statitistical Package of Social Sciences version 17), by which the researcher estimate the numbers, their percentages, chi-square, Fischer Exact test and P values .

RESULTS

See Tables.

Discussion:

Most of the studied patients in our study were of age group between 3-10years ,nearly equal sex distribution with average weight of 20-30kg as in tables 1,2 and 3 to avoid fibrous tonsils in older age group. The use of hydrogen peroxide as a haemostatic agent in tonsillectomy was not found when reviewing the available literature hydrogen peroxide has been used for decades as a haemostatic agent in orthopaedics[10] Chang et al, carried out a study in 120 pediatric patients undergoing adenoidectomy with use of cold hydrogen peroxide. They found that the incidence of oozing and active bleeding decreased when cold hydrogen peroxide was applied. [11] The present study confirms that the use of hydrogen peroxide as well as iced saline tonsillectomy achieved a reduction in tonsillectomy time and operative blood loss and number of packs in comparison

with ordinary non agent packs shown in table 4, 6 and 8 coincide with Al-Abbasi,et al[12]and Chang et al, [11] . In this study there is statistically significant difference between use of hydrogen peroxide and iced normal saline in the average of blood loss as shown in table 5 but no significant difference in case of number of packs and duration of operation as revealed in tables 7 and 9 respectively. No adverse effect was reported by the use of hydrogen peroxide in tonsillectomy in the present study despite some reports stating that dangerous squeals can result from the use of such a preparation, especially when used in neurosurgical fields. Dubey et al[13] presented a case of suspected gas embolism following hydrogen peroxide irrigation of the surgical field during posterior fossa surgery in the prone position. Severe cardiovascular collapse occurred when the wound was irrigated with a hydrogen peroxide solution. The interesting additional benefit of hydrogen peroxide is its action to clarify the exact localizations of bleeders which need to be ligated especially in cases of difficult dissection in fibrotic tonsils with excessive bleeding. This advantage has been utilized by Kalloo et al, who used hydrogen peroxide spray through an endoscope. This resulted in enhancement of clot dissolution and endoscopic visualization of the bleeding source.[14] The limitations of this present study are the absence of testing the long term effect of hydrogen peroxide and no long term follow-up of the patients. The number of patients studied was also relatively small, indicating the need to perform a broader study with a longer period of follow up.

Conclusion:

Local application of 3% hydrogen peroxide or iced normal saline on the tonsillar bed after tonsillectomy is beneficial as it decreases the procedure time and the volume of blood loss as well as number of pack used.

TABLES

Table1:distribution of studied population according to age

age	group						Total
	a	%	b	%	c	%	
1-5	9	60	5	30	14	46	28
5-10	4	26	8	53	12	40	24
>10	2	14	2	14	4	14	8
Total	15		15		30		60
Fisher's Exact Test			2.603		P value		.080

Table 2:Distribution of studied group according to sex

sex	group						Total
	A	%	b	%	c	%	
male	10	66	6	40	16	53	32
female	5	33	9	60	14	47	28
Total	15		15		30		60
Pearson Chi-Square			2.143[a]		P value		0.102

Table 3:Distribution of studied group according to weight

Weight by Kg		Group						Total
		a	%	b	%	c	%	
	<20	1	7	3	20	4	13	8
	20-30	12	80	9	60	21	70	42
	>30	2	13	3	20	5	17	10
Total		15		15		30		60
Fisher's Exact Test				1.733		P value		0.110

Table4: Association of the total blood loss with the three methods of tonsillectomy

Total Blood Loss by cc	Group						Total
	a	%	b	%	c	%	
10-15CC	8	53	5	33	5	17	18
15-20cc	3	20	1	7	3	10	7
20-30cc	4	27	9	60	22	73	35
Total	15	100%	15	100%	30	100%	60
Fisher's Exact Test		9.643		Point probability			0.001

Table 5 Association of the total blood loss with the two methods of tonsillectomy

Total blood loss		group				Total
		a	%	b	%	
	10-15CC	8	53	5	33	13
	15-20	3	20	1	7	4
	20-30	4	27	9	60	13
Total		15		15		30
Pearson Chi-Square				3.615[a]		
Point probability				.047		
Fisher's Exact Test				3.464		

Table 6:Association of number of packs with the three method of tonsillectomy

number of packs	Groups						Total
	a	%	b	%	c	%	
1	6	40	2	14	6	20	14
2	6	40	11	72	18	60	35
3	3	20	2	14	5	17	10
4	0	0	0	0	1	3	1
Total	15		15		30		60
Fisher's Exact Test			5.246		P value		.055

Table 7:Relationship between the number of packs and main methods of comparison

No. of packs		group				Total
		a	%	b	%	
	1	6	40	2	14	8
	2	6	40	11	72	17
	3	3	20	2	14	5
Total		15		15		30
Pearson Chi-Square				3.671[a]		
P value				0.157		
Fisher's Exact Test				3.579		

Table 8: Association of duration of operation with the three method of tonsillectomy

duration of operation by minutes		Group						
	Minutes	a	%	b	%	c	%	Total
	10-20M	12	80	13	86	14	47	39
	20-30M	3	20	0	0	6	20	9
	>30	0	0	2	14	10	33	12
Total		15		15		30		60
Pearson Chi-Square Point probability Fisher's Exact Test		12.154[a] 0.001 12.377						

Table 9:Duration of operation in the main compared group

		group				Total
Duration Of Operation	Minutes	a		b		
	10-20M	12		13		25
	20-30M	3		0		3
	>30	0		2		2
Total		15		15		30
Pearson Chi-Square		5.040[a]				
P value		0.235				
Fisher's Exact Test		4.278				

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Comparison Between Hydrogen Peroxide, Iced Packs And Non Agent Packs In Tonsillectomy Haemostsis

مقارنة بين استعمال الشاش المنقوع ببيرو كسيد الهيدروجين ، بالسائل الملحي البارد و الشاش غير المنقوع في عملية استئصال اللوزتين

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الخلاصة: عملية استئصال اللوزتين هي إحدى أكثر العمليات التي تجري من قبل جراحي الأنف والأذن والحنجرة اللذين يبحثون في الطرق التي تؤدي إلى اختصار وقت العملية وكمية خسارة الدم أثناء اجرائها٠

في هذه الدراسة كان الهدف هو أجراء مقارنة بين فائدة استعمال الشاش المنقوع ببيرو كسيد الهيدروجين ٣%،مع الشاش المنقوع بالمحلول الملحي البارد في اختصار وقت العملية ،كمية الدم المفقود وعدد لفات الشاش المستخدم ٠

طريقة العمل : أجريت هذه الدراسة التحليلية المقطعية على ثلاثين مريضا"(٦٠لوزة) في صالة عمليات الأنف ولأذن والحنجرة في مستشفى الحبوبي العام في الناصرية –العراق للفترة منذ الأسبوع الأول من شهر آذار ٢٠١١الى الأسبوع الأخير من شهر تشرين الثاني ٢٠١١ تم تقسيم اللوزات الى ثلاث مجاميع ،مجموعة أ(١٥ للوزة) ،مجموعة ب(١٥ لوزة) والمجموعة الثالثة ج(٣٠ لوزة) ٠استعمل للمجموعة الأولى الشاش المنقوع بمادة بيرو كسيد الأوكسجين ٣% وللمجموعة الثانية الشاش المنقوع بالمحلول الملحي البارد في حين لم يستخدم أي محلول مع الشاش في المجموعة الثالثة٠

النتائج: أظهرت النتاج أن الوقت كان اقصر وكمية خسران الدم وعدد لفات الشاش اقل في المجموعة التي استخدم فيها بيرو كسيد الهيدروجين ٣%٠

الاستنتاج: استعمال بيرو كسيد الهيدروجين ٣% ذو فائدة واضحة في اختصار وقت العملية وتقليل كمية الدم المفقود وعدد لفات الشاش المستخدم أثناء عملية استئصال اللوزتين أكثر من المحلول البارد والذي هو أفضل بدوره من الشاش غير المنقوع٠

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