EMERGENCY TRACHEOSTOMY, AN EXPERIENCE OF 120 CASSES

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ABSTRACT

Objectives: The objective of this study is to compare short term complications in elective and emergency tracheostomy

Study Design: Qausi Experimental study

Place and Duration of Study: Department of ENT, Head and Neck Surgery Combined Military Hospital Rawalpindi from Jun 2006 to Jun 2008.

Patients and Method: In this study 120 patients undergoing tracheostomy were included. Patients were purposely divided into two groups of 60 each. Patients in Group A had elective tracheostomy where as group B included 60 patients who under went emergency tracheostomy. Short term complications including haemorrhage, surgical emphysema, cardiac arrest and stomal infection were noted in both groups. Chi-square test was applied as test of significance to compare the two groups.

Results: Emergency tracheostomy in our study is associated with significantly increased risk of haemorrhage and surgical emphysema (p value being <0.05). There was no statistical difference in occurrence of stomal infection and cardiac arrest between the two groups.

Conclusion: Emergency tracheostomy is associated with significantly increased risk of postoperative haemorrhage and surgical emphysema.

Keywords: Emergency tracheotomy, Surgical emphysema, Short term complications

INTRODUCTION

Tracheotomy is defined as a procedure of opening the trachea. Tracheostomy is a procedure that exteriorizes the trachea to the cervical skin. This procedure has numerous complications that are more in cases of emergency procedures and are mostly avoidable if the procedure is carefully performed together with strict post-operative management.[1] Common acute risks of tracheostomy include bleeding, airway loss and damage to adjacent structures. The intraoperative haemorrhage can be fatal in emergency tracheostomy.[2] Apart from peri-operative complications elective and emergency tracheostomy is associated with wide range of unique late complications of which commonest is tracheal stenosis. Tracheo-innominate artery fistula is a rare but fatal complication after trachesotomy. Infection at tracheostomy site and subcutaneous abscess also occur after tracheostomy. Avoiding complications from tracheostomy requires a skilled multi disciplinary approach to ensure that benefits out weigh the risks of procedure. In addition to life threatening complications, tracheostomy is also associated with diminished quality of life, stressing the need for decannulation at an appropriate time.

This study is aimed at comparing short term complications of the elective and emergency tracheostomy in our tertiary care centre.

MATERIAL AND METHODS

This study was set in CMH Rawalpindi. All consenting patients over 12 years of age under going tracheostomy from Jun 2006 to July 2008 for various indications were included in the study. Elective tracheostomy (Group A) was defined as one performed under general anaesthesia in intubated patients. Emergency tracheostomy (Group B) was performed in patients with respiratory distress under local anaesthesia. Total of 120 tracheostomies were included in the study and purposely divided into two groups. Short term complications were defined as those occurring with in 72 hrs of tracheostomy. Complications studied included haemorrhage, surgical emphysema, cardiac

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arrest, stomal infection, apnoea and pneumothorax. Mild Haemorrhage was defined as soakage 2-4 gauze pieces measuring 6X2 cm. Soakage of 5-7 gauze pieces and 8-10 gauze pieces were defined as moderate and severe haemorrhage respectively. All patients in group A were given transverse incision, where as vertical incision was made in group B and thyroid isthimus was retracted upwards in both groups. Post operatively both groups received injection Co-Amoxiclav 1.2 gram 8 hourly after test dose. Surgical emphysema was noted by palpation and post operative X ray chest was advised to exclude pneumothorax. Stomal infection was defined as presence of pus in the tracheostome.

Mean and standard deviation was calculated for age and frequency for gender, haemorrhage, surgical emphysema, cardiac arrest. Chisquare test was applied as test of statistical significance to compare the two groups.

RESULTS

Out of the 120 patients there were 98 males and 22 females. The age of patients varied from 13 to 82 years. Mean age was 50.85 yrs Standard Deviation was 5.9. In group A mean age was 46 years where as mean age in group B was 55 years. The reason for this change was that majority of patients in group B were elderly patients of growth larynx or hypopharynx. The patient characteristics are shown in table 1. Graph shows distribution of mild, moderate and severe haemorrhage between the groups. Frequency of cardiac arrest, stomal infection is shown in table 2 where as frequency of haemorrhage(Figure) and surgical emphysema is shown in table 3. Apnoea, pnumothorax were not observed in any case in the study.

Two patients in group A with severe haemorrhage were taken back to operation theatre and a bleeding anterior jugular vein was ligated. In group B, 12 patients with severe haemorrhage were taken to the operation theatre out of which 4 patients had bleed from the thyroid isthimus. Thyroid Isthimus in these cases were transected and over sewn. Eight patients in group B with severe haemorrhage were managed conservatively with pressure dressing. Mild haemorrhage in all cases in both groups responded to conservative management. All cases of surgical emphysema in both group A and Group B were treated conservatively by removing the suture's approximating the skin incision. Two patients in group B went into cardiac arrest and were successfully resuscitated. There were no procedure related deaths in our study. Chi square test was applied to test the significance of haemorrhage, cardiac arrest, surgical emphysema and stomal infection in both groups. p value was less than 0.05 in haemorrhage and surgical emphysema and the difference between the two groups were statistically significant. Where as for stomal infection and cardiac arrest p value was > 0.01 and the results were not significant.

These results show that the difference of haemorrhage and syrgical emphysema in both groups is statistically significant

DISCUSSION

Complications from surgical procedures are common and must be taken into account when assessing the risks and benefits of a particular treatment plan. Common short term complications of tracheostomy include bleeding, airway loss, damage to adjacent structures. The frequency and severity of these occurrences depends on several factors, like, skill and experience of the operator, and patient anatomic and physiologic factors. Complications of tracheostomy have been extensively studied and found to have decreased with improvements in operative skills and advancements in intensive care.[3] However a camparison of planned and emergency tracheostomy in single study has not been performed recently as was done in this study. In our study, 120 trachesotomies were studied of which there was a male predominance. The reason for this finding is that majority of patients requiring emergency tracheostomy were those having malignancy of the larynx which occurs more commonly in males. This finding is in agreement with shahabi etal.[4] In there study male female ratio was 3:1.

Table-1: Group Wise gender distribution of Patients

	Males	Females	Total
Group A	52	8	60
Group B	46	14	60

Table 2: Frequency and p value of Cardiac Arrest, and Stomal Infection

	Cardiac Arrest	Stomal Infection	p Value
Group A	0(0%)	10(16.6%)	> 0.05
Group B	2(3.4%)	14(23.3%)	> 0.05

Table-3: Frequency and p value for Haemorrhage and Surgical Emphysema

Complication	Group A	Group B	P value
Haemorrhage	28(46.6%)	48(80%)	<0.05
Surgical Emphysema	4(6.6%)	36(60%)	<0.05

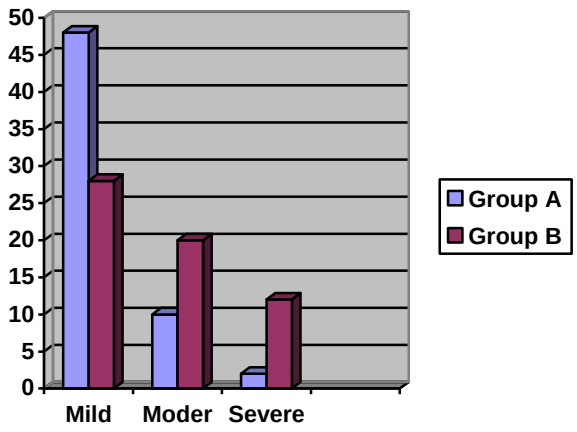

Figure: Group Wise Distribution of Haemorrhage.

Haemorrhage is the most common complication of tracheostomy and occurs from anterior jugular vein and middle thyroid veins.The Shahabi has reported haemorrhage rate of 6 %.[4] Where as in my study the rate of severe haemorrhage is 3% in group A and 20% in group B. The reason for this difference is that Shahbi et al have calculated the rate of primary haemorrhage between elective and emergency tracheostomy collectively where as in my study independent rate for haemorrhage was calculated for elective and emergency tracheostomy. In a meta-analysis by Dulguerov et al[5], haemorrhage was the most frequent complication of tracheostomy. Friedman et al[6] in his study found minor haemorrhage occurring in 60% cases and major haemorrhage in 2% cases. Waldron etal.[7] reported significant difference between occurrence of mild and severe haemorrhage in emergency tracheostomy. However these findings were not supported by Goldenberg et al[8] largely because of the greater number of sample size.

Surgical emphysema is another common complication after emergency tracheostomy.[9] Freeman etal[10] have reported rates of surgical emphysema and in elective tracheostomy as, 5%, Asmatullah and collegues[11] have studied complications in emergency tracheostomy and reported surgical emphysema as the commonest complication followed by haemorrhage. These findings are consistent with results of my study however the rates of these complications differ from my study. The reason for this discrepancy is that in their study all tracheostomies were performed by senior registrars or consultant ENT specialists where as in my study all tracheostomies were performed by level III and IV residents. Ameye etal[12] stated that surgical emphysema does occur more frequently in emergenecy tracheostomy, a finding that was confirmed in my study.

A tracheotomy is a clean contaminated wound. The reported incidence of infection is highly dependent upon the criteria of infection of the individual study and the post operative care available. While the rate of stomal infection has been reported to be as high as 36% by Stauffer.[13] The incidence of cellulitis and purulence has generally been reported at 3 to 8%. Stomal infection usually manifests as an indolent infection, mild cellulitis or granulation tissue. Stomal infection is a frequent complication of trachesotomy and its occurrence is not dependent on the preioperative situation but on the post-operative wound care.[14] This result was also consistent with my results as there was no statistical difference in stomal infection between elective and emergency tracheostomy groups.

Cardiac arrest occurred in one case in my entire study where as Delgeurov et al[5] in a metanalysis comprising of 10000 patients revealed cardiac arrest in only 3 cases a rate very similar to our study. This finding of our study is also in line with the fact already confirmed by Jones[15] In his work the occurrence of cardiac arrest was dependent on coexisting disases in addition to sudden reversal of acidosis.

CONCLUSION

Emergency tracheostomy is associated with increased risk of post-operative haemorrhage and surgical emphysema in our study. Carefull haemostatsis once the airway has been controlled and loosely tying the skin sutures can reduce the risk of these complications in emergency procedures.

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