

Guillotine and dissection tonsillectomy in children

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Abstract

Tonsillectomy as an outpatient or same day-stay procedure is becoming increasingly popular. A retrospective study was performed on 1,049 children who underwent tonsillectomy and adenotonsillectomy either with guillotine or dissection with snare method. The dissection method was performed both under general anaesthesia and with local anaesthesia, but the guillotine method was performed only with local anaesthesia. Generally, bleeding control required no special intervention in the guillotine method but haemostasis was achieved by ligation and electrocauterization in one-third of the patients in the dissection group operated under general anaesthesia. The greatest percentage of haemorrhage in both methods occurred within the first four post-operative hours. There was a 1.8 per cent incidence of severe reactive haemorrhage required surgical intervention in the dissection group operated under general anaesthesia, but there was no such case in the guillotine group.

The results of this study show that in carefully selected children guillotine tonsillectomy with local anaesthesia is a safe, time saving and cost-effective procedure.

Introduction

In the field of otorhinolaryngology, tonsillectomy and adenoidectomy are the commonest surgical procedures performed in children. As a rule, in Turkey, local anaesthesia is used for adults and general anaesthesia for children. Tonsillectomy is also an operation performed with a variety of surgical methods and post-operative management philosophies (Linden *et al.*, 1990). The most frequently used method is blunt dissection with snare excision. The other methods are mainly guillotine, electrocautery dissection and laser. Although little has been written about guillotine tonsillectomy in recent years, it is still a common operation in some areas. The guillotine operation with local anaesthesia still continues to be routinely practised in our department in addition to the dissection method.

The purpose of this paper is to evaluate its place in modern practice in carefully selected children.

Subjects and methods

One thousand and forty-nine patients were admitted to this study. The study was carried out between January 1985 and November 1991 at Erciyes University Medical School Hospital, Kayseri. All of the patients had recurrent attacks of sore throat with fever and most of them had hypertrophic tonsils. At the original presentation to the doctor, questions were asked about any bleeding tendency within the family. Any suspicion led to haematological investigation. Patients were not otherwise routinely

screened for bleeding diathesis. Pre-operative tests for asymptomatic patients were haematocrit and urinalysis. The operations were carried out by three consultants and by six junior surgeons.

The surgical methods used were blunt dissection with snare excision and guillotine. Dissection was performed both under general anaesthesia and with local anaesthesia in accordance with our usual practice. Guillotine tonsillectomy was performed only with local anaesthesia. Asymptomatic patients with hypertrophic tonsils were chosen for guillotine tonsillectomy. During the morning of surgery, pre-operative medications including an analgesic (such as phenyldimethylpyrazolone) and a drying agent (such as atropine) were given. Approximately half an hour after premedication, the mouth of the child was rinsed with Pantocain (2 per cent) gargle and then, the child was held in the sitting position. A Jennings' mouth gag was inserted and the mouth opened wide. Using Sluder's guillotine, the tonsils were removed by the standard method. Both tonsillar fossae were then inspected and the bases snared if any tonsil remnant was present.

Adenoidectomy was performed with an adenotome and/or a curette under general anaesthesia or with local anaesthesia.

Bleeding was controlled by tampon, ligation or electrocautery. During the post-operative period observations were made for bleeding related to tonsillectomy. Bleeding was subdivided into minor reactive, severe reactive and secondary haemorrhage. Minor reactive haemorrhage was defined as mild bleeding occurring immediately post-operatively and settling spontaneously or with local treat-

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TABLE I

AGE DISTRIBUTION OF PATIENTS OPERATED WITH GUILLOTINE AND DISSECTION METHOD

Age	≥3	4-7	8-11	12-15	Total
Guillotine tonsillectomy with local anaesthesia	19	316	225	46	606
Dissection tonsillectomy with local anaesthesia under general anaesthesia	–	5	19	89	113
Total	30	475	366	178	1049

ment such as cold water gargles or removal of clot. Severe reactive haemorrhage was considered as bleeding, necessitating the patient's return to the operating room for haemostatic control. Secondary haemorrhage was considered as any bleeding which occurred more than 24 hours after surgery.

The incidence of tonsil remnants was assessed at the time of operation and one week after operation. Lymphoid tissue which exceeded 1 cm in diameter was classified as a big tonsil remnant.

Post-operatively acetaminophen was ordered routinely for pain, but as a rule, children received no antibiotics. Prior to being discharged all patients were re-examined by the surgeon. The parents were advised both verbally by the nursing staff as well as by the issue of printed instruction sheets concerning the management of the case at home. The families were told that if any complications, such as bleeding and/or vomiting occurred, to return at once to the hospital.

The incidence, severity and time of complications such as bleeding, soft tissue injury, protracted emesis and complications due to anaesthesia were noted.

Results

Of 1,049 children, 841 (80 per cent) were between the ages four and 11 (Table I). There was slight male predominance in both groups, 56 per cent (339 children) in the guillotine group and 53 per cent (235 children) in the dissection group.

The surgical procedure and methods performed are seen in Table II.

The operation time varied from 15 minutes to one hour with the dissection method operated under general anaesthesia, but the whole procedure took about one minute with the guillotine method. Anaesthetic complications, such as extubation of endotracheal tube which resulted in cardiac arrhythmia and cyanosis developed in four patients (1.2 per cent) during the operation under general anaesthesia. Cardiac arrest occurred in one of them, but function returned with resuscitation without complica-

TABLE II

TYPES OF OPERATIONS RELATED TO TYPES OF TONSILLECTOMY METHOD

Operations	Guillotine with LA		Dissection			
	No.	(%)	with LA No.	with LA (%)	under GA No.	under GA (%)
Tonsillectomy	401	66	107	95	182	55
Adenotonsillectomy	205	34	6	5	148	45
Total	606	100	113	100	330	100

LA: Local anaesthesia.

GA: General anaesthesia.

tion. These operations were performed by junior surgeons.

In children operated by guillotine, generally, no special intervention was required to control the bleeding. Rarely, one or two temporary tampons were applied, and only three patients required haemostasis by ligatures. On the other hand, the bleeding control especially in patients operated under general anaesthesia was not easy. In addition to tampon, ligation and electrocauterization were used for bleeding control in one-third of the patients (Table III). The amount of blood loss was less in children operated with guillotine than that in children operated with dissection under general anaesthesia.

The greatest percentage of haemorrhage in both methods occurred within the first four hours post-operatively (94 per cent). Between the second and fourth hours after surgery, seven children experienced severe reactive haemorrhage requiring surgical intervention. Of these, six (1.8 per cent) originated in the tonsillar bed and one (9 per cent) in the adenoidectomy site in the dissection group. Of seven severe reactive haemorrhages, six were in patients operated under general anaesthesia and three of them received blood transfusion. On the other hand, there were no cases of severe reactive haemorrhage in patients operated with guillotine (Table IV).

Five hundred and seventy-six of 606 patients (95 per cent) operated with the guillotine were discharged on the day of operation, but only 359 of 443 patients (81 per cent) operated with the dissection method were discharged on the same day. Seven patients (1.2 per cent) operated by the guillotine method and five patients (1.1 per cent) operated with the dissection method required readmission to the hospital because of bleeding which later subsided spontaneously. Of these patients, all were discharged after one night in hospital.

To date, only one case has been readmitted for recurrent tonsillitis in a tonsil remnant, three years after guillotine tonsillectomy. No psychological problems such as night terrors, stuttering or enuresis were reported.

Discussion

Tonsillectomy as an outpatient procedure is becoming more prevalent and acceptable. Many surgeons now routinely elect to perform tonsillectomies on an outpatient or same day-stay basis in selected cases (Segal *et al.*, 1983; Maniglia *et al.*, 1989; Guida and Mattucci, 1990; Haberman *et al.*, 1990), but there are very few studies about guillotine tonsillectomy. Although guillotine tonsillectomy is performed by many under general anaesthesia, we do it using a local anaesthetic. On the other hand, Yuan *et al.* (1984) perform guillotine tonsillectomy without anaesthesia.

TABLE III

PROCEDURES PERFORMED FOR BLEEDING CONTROL DURING OPERATION

	Electro-cauterization		
	Tampon	Ligation	
Guillotine tonsillectomy	Rarely	3 (4%)	–
Dissection tonsillectomy under GA with LA	Frequently	69 (19%)	14 (5%)
	Frequently	26 (23%)	–

GA: General anaesthesia.

LA: Local anaesthesia.

TABLE IV
COMPARISON OF COMPLICATIONS

	Guillotine with LA	Dissection under GA	with LA
Haemorrhage			
Minor reactive	85 (14%)	56 (17%)	18 (16%)
Severe reactive	–	6 (1.8%)	1 (0.9%)
Secondary	7 (1.2%)	3 (0.9%)	2 (1.8%)
Complications of anaesthesia	–	4 (1.2%)	–
Protracted emesis	–	4 (1.2%)	–
Severe soft tissue injury	–	–	–
Mortality	–	–	–
Incidence of tonsil remnants	22 (3.6%)	3 (0.9%)	2 (1.8%)

The objections to guillotine tonsillectomy have tended to be theoretical rather than based on sound evidence of its disadvantages. The first obvious theoretical drawback of the guillotine method is that there is no attempt to control the blood loss and no time to ligate bleeding vessels (Kerr and Brodie, 1978). Another problem with guillotine tonsillectomy is tonsil remnants and it was the occurrence of these which led to the unpopularity of the guillotine operation in the early part of this century (McGuire, 1967; Kerr and Brodie, 1978). The careful and accurate application of the instrument enables the whole tonsil to be removed with a clean tonsil bed and undamaged faucial pillars. Small flat tonsils and those in which there have been attacks of quinsy and lack mobility are difficult to remove with the guillotine and should be dissected (McGuire, 1967). However, the great majority of children's tonsils are hypertrophic and convenient for guillotine tonsillectomy. On the other hand some authors state that the guillotine method can be as complete as a dissection method (Weligodopola, 1983; Yuan *et al.*, 1984).

Another objection to guillotine tonsillectomy is said to be psychological problems, such as night terror, and stuttering. We don't deny that local tonsillectomy may cause psychological problems but this point of view is much exaggerated and psychological trauma can be reduced by building up the patient's confidence and by lessening the patient's fear. On the other hand, it is difficult to be certain that there is no psychological trauma in children operated under general anaesthesia. In the present study, none of the families confessed to psychologic problems in their children operated under local anaesthesia. Yuan *et al.* (1984), reported that most of the children operated without anaesthesia didn't feel pain.

Among the most serious complications to be associated with tonsillar or adenoid surgery are those attributable to the anaesthesia. Endotracheal intubation has certain risks associated with laryngeal trauma, laryngospasm, and laryngeal oedema. In contrast, insufflation anaesthesia presents hazards associated with inadequate control of the airway as well as flammability (Kornblut and Kornblut, 1990). In addition, general anaesthesia often carries side-effects, such as vomiting, anorexia, headache, uneasiness (Yuan *et al.*, 1984) and increases the bleeding tendency. Guillotine tonsillectomy with local anaesthesia eliminates all the dangers and unfavourable side effects of general anaesthesia.

Bleeding is the most frequent complication of tonsillectomy and is responsible for the majority of post-tonsillectomy fatalities. However, it is difficult to assess its incidence and severity from reports in the literature due to inadequate definition of criteria (Carmody *et al.*, 1982).

The bleeding rate after tonsillectomy varies from 0.1 per cent to 7 per cent in different studies (McGuire 1967; Maniglia *et al.*, 1989; Guida and Mattucci, 1990; Haberman *et al.*, 1990). Our post-operative bleeding rate requiring surgical intervention was 1.8 per cent, in the dissection method operated under general anaesthesia which is similar to others. However, bleeding requiring surgical intervention was 0 per cent in the guillotine method. A recent study recommended a six hour post-operative stay in the hospital to minimize the risk of post-operative complications (Guida and Mattucci, 1990). The present study supported this opinion that the greatest percentage of complications occurred within the two to four hours post-operatively. The earlier in the morning the procedure is performed, the more effective same day stay becomes (Helmus *et al.*, 1990). Guillotine tonsillectomy with local anaesthesia takes only one or two minutes and provides much more time for observation of the patients. In addition, tissue is less injured and vascular contraction will take place in guillotine method. As a result of this, bleeding is much less than that in the dissection method (McGuire, 1967; Weligodopola, 1983; Yuan *et al.*, 1984; Warwick-Brown, 1986; Wake and Glossop, 1989). Nursing care is another important factor in successful outpatient or same day-stay tonsillectomy. The guillotine method with local anaesthesia makes nursing care earlier because of stable vital signs.

Conclusion

The results of this study show that in carefully selected children guillotine tonsillectomy with local anaesthesia is simple, safe, time saving and cost effective.

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