

# Ligation versus Electrocoagulation

## A Comparative Study of Haemostatic Methods Used in Tonsillectomy

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Saudi Medical Journal 1984; 5: 177-182

اجريت الدراسة العالية لمقارنة فعالية الارقاء الدموي للتخثير الكهربى والربط بعد استئصال اللوزتين فى شروط متماثلة ، للتوصل الى ذلك تسم الارقاء الدموي بالربط فى جانب وباستخدام التخثير الكهربى فى الجانب الاخر عند نفس المريض .

فى مجموعتنا المكونة من ١٠٠ مريض ، اثبت كلا من الربط والتخثير الكهربى نفس الفعالية فى التحكم بالنزف الاولى . اما بالنسبة الى التحكم فى النز الشعرى فان التخثير الكهربى افضل من الربط فى ذلك . وكانست نسبة حدوث النزف التفاعلى والثانوى اقل بالتخثير الكهربى .

ان كلا من الطريقتين لهما نفس التأثير من حيث الالم بعد العمل الجراحى وشكل بناء غشاء الكريات البيض وزمن انفصال غشاء الكريات البيض وتكون البشرة الظهارية والتندب النهائى .

الربط والتخثير الكهربى لهما نفس التأثيرات على المرضى المصابين بامراض مختلفة مثل الداء السكرى والامراض الدموية والامراض الكبدية والمرضى الذين يخضعون لعلاج يوهب الى نزف لوزات متاخر مثل الاسيرين . التخثير الكهربى وجد بانه اكثر امانا، اسهل نسبيا ، اسرع بالمقارنة واكثر دقة عموما من الربط .

**Summary:** The present study was carried out to compare the haemostatic efficiency of electrocoagulation with that of ligation following tonsillectomy operations under identical conditions. To achieve this, haemostasis was done by ligation on one side and electrocoagulation on the other, in the same patient. In our series of 100 patients, ligation and electrocoagulation proved to be equally effective in controlling primary haemorrhages. In controlling the capillary oozing electrocoagulation was found to be far superior to ligation. The incidences of reactionary and secondary haemorrhages were less with electrocoagulation. Both methods of haemostasis seemed to have identical effect on postoperative pain, character of leukocytic membrane formation, time of leukocytic membrane separation, epithelialization and final cicatrization. Ligation

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assess their effects on these two methods of haemostasis for controlling primary haemorrhage.

Unlike Johnson<sup>4</sup> and Scott-Brown<sup>5</sup> we found that bleeding from all sizes of blood vessels in the tonsillar fossa could be easily controlled by electrocoagulation without the need for ligation.

On the ligated side the incidence of reactionary haemorrhage was 1% and the incidence of secondary haemorrhage was 2%. On the electrocoagulated side there was no reactionary or secondary haemorrhage. The clinical significance of this small statistical difference is doubtful. This is contrary to the findings of Haase & Noguera<sup>6</sup> who reported a 7% incidence of secondary haemorrhage in electrocoagulation. Our results seem to confirm the findings of Ritter & Fink<sup>2</sup> that 'delayed bleeding occurred less often when electrocoagulation was used'.

The intensity and duration of postoperative pain seemed to depend more on the pain threshold of the individual patient and were directly proportional to the surgical trauma and were not related to haemostatic technique. It was interesting to note that all post-quinsey tonsillectomy patients had more local and referred pain to the quinsey side irrespective of the technique of haemostasis. Local pain in the throat started immediately following surgery and persisted until the 4th to 16th postoperative day. Referred pain was noted between the 2nd and 7th days and persisted until the 4th to 10th postoperative day. Cases with equal local and/or referred pain on both sides had relief of pain almost simultaneously, without much difference between the ligated and coagulated sides.

Ligation and electrocoagulation had similar effects on the character of leukocytic membrane formation and membrane separation. It was observed that the thickness of leukocytic membrane was directly proportional to the operative trauma. The period of complete leukocytic membrane separation was between the 6th and 18th postoperative days, and membrane separation was more or less simultaneous on both sides under identical conditions. Membrane separation was always delayed on the side of difficult and relatively traumatized tonsillectomy following either technique.

Reactionary oedema of the surrounding tissue was directly proportional to the surgical trauma irrespective of the technique of haemostasis. In most of the cases, the number of coagulation points was relatively more than the number of ligation points. In spite of this, no comparable difference in reactionary oedema was noted on the coagulated side. It became apparent from this observation that tissue trauma in electrocoagulation was marginally less than that in ligation.

Neither haemostatic technique in any way influenced the satisfactory epithelialization and final cicatrization of the tonsillar fossa. Contrary to the findings of Ritter & Fink<sup>2</sup> we found that under identical conditions complete epithelialization occurred almost simultaneously between the 9th and 22nd postoperative days. Delayed epithelialization and excessive cicatrization were noted following difficult and traumatic tonsillectomy. We failed to confirm the finding of Flint<sup>3</sup> that 'every tie inserted causes a small scar'.

Both the techniques had identical effects on patients with other associated problems like diabetes, hypertension, blood dyscrasia and menstruation.

Unipolar electrocoagulation apparatus was proved to be safe provided the necessary precautions were taken and well-insulated modern electrosurgical instruments and new semidisposable surgical plate electrodes consisting of strip foil on a plastic film were used. This ensures complete protection against the hazards of diathermy burn.

Electrocoagulation was a relatively easier technique and did not require special skill like applying surgical knots inside the oropharynx. Surgeons equally experienced in both techniques found electrocoagulation to be significantly faster. On average, the time needed for haemostasis was nearly 50% less on the side of coagulation than that needed for ligation.

Electrocoagulation could be applied more precisely on a relatively fine bleeding point without causing much damage to the surrounding tissue. Ligation of similar fine blood vessels generally ran the risk of tearing the vessel, especially in a deep tonsillar fossa.

Electrocoagulation was undoubtedly superior to ligation in controlling capillary oozing to achieve a completely dry field at the end of the operation. In the ligation technique control of such capillary oozing was entirely dependent on the tedious and time-consuming method of packing the tonsillar fossa.

### Acknowledgment

The authors acknowledge with gratitude the critical review of the article by Dr Sirimewan Karunatileka De Silva, Assistant Professor, Faculty of Medicine.

### References

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