

# Macroscopic and microscopic changes in the fallopian tube after bipolar cauterization

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## Summary

A total of 43 patients who had undergone laparoscopic tubal occlusion by means of bipolar cauterization underwent bilateral salpingectomy 6-30 months later. The macroscopic and microscopic changes in the fallopian tubes are described. Although 35 patients appeared to have occluded tubes on macroscopic examination, only 22 showed occlusion on microscopic examination.

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During the 5-year period 1976 - 1980 1 045 patients underwent laparoscopic tubal occlusion at Groote Schuur Hospital, Cape Town. The various methods of tubal occlusion employed are listed in Table I.

TABLE I. LAPAROSCOPIC TUBAL OCCLUSIONS,  
1976 - 1980

Method	No.	No. of pregnancies
Hulka clips	60	0
Filshie clips	42	1
Falope rings	591	1
Bipolar cauterization	352	14

Of the 16 pregnancies which occurred in the group, 14 followed bipolar cauterization. When it became clear that an unacceptably high pregnancy rate (39,8/1 000) was associated with the method, all patients who had undergone tubal occlusion by means of bipolar cauterization were contacted by the family planning clinic and advised to use some other form of contraception until they had been checked for tubal occlusion, or until

laparotomy had been performed. A total of 43 patients elected to have a laparotomy and repeat tubal occlusion. The macroscopic and microscopic findings are described.

## Results

In all patients who had undergone bipolar cauterization, one or two sites per tube were cauterized. The tubes were not surgically divided, and cauterization was continued until the characteristic 'popping' sound was heard. At the second operation the macroscopic appearance of the fallopian tubes was noted (Table II). All the tubes revealed clear signs of having been cauterized, as shown in Fig. 1. The microscopic findings are listed in Table III. Although 35 patients appeared to have occluded tubes on macroscopic examination, only 22 showed occlusion on microscopic examination.

**TABLE II. MACROSCOPIC APPEARANCE OF FALLOPIAN TUBES AFTER BIPOLAR CAUTERIZATION**

Bilateral fibrous bands	35
Short constricted area	4
Partially narrowed area	4
Fistulas	0
Total	43

**TABLE III. MICROSCOPIC APPEARANCE OF FALLOPIAN TUBES AFTER BIPOLAR CAUTERY**

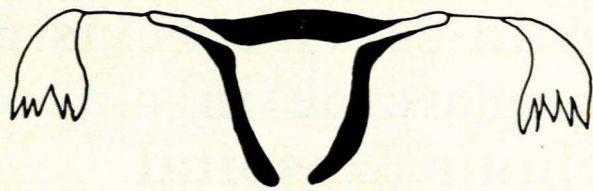
Bilateral tubal occlusion	22
Small lumen lined by flattened cells	10
Narrowed segment with normal lumen	3
Inadequate specimen	8
Total	43

## Discussion

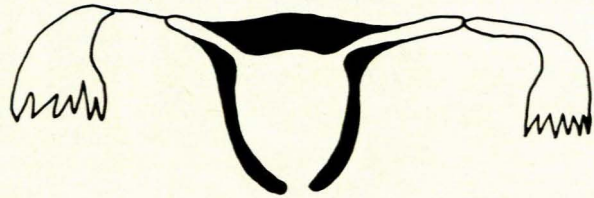
Bipolar cauterization, although safer than unipolar cauterization, operates on a very low voltage, and therefore complete tissue destruction may not occur.<sup>2</sup> For acceptable results it has been recommended that 3 cm of the tube be destroyed by multiple-point coagulation.<sup>2</sup>

Donnez *et al.*<sup>3</sup> found that 1 month after bipolar tubal electrocoagulation a lumen without epithelium was present at the site; fine cuboidal epithelium without ciliated cells lined the lumen 1 cm from the burn area and normal epithelium was present 2 cm from the site. If 3 cm of the tube is destroyed by electrocautery and abnormal epithelium extends for 2 cm from the coagulated area, re-anastomosis is virtually impossible.

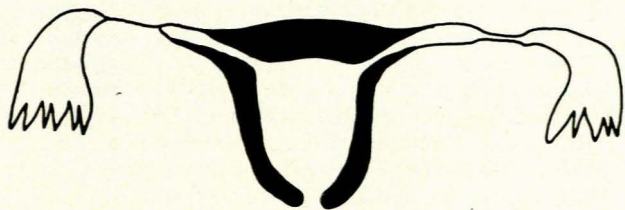
When Falope rings were used as an alternative form of occlusion it was found that the tubal epithelium was abnormal on



A. Bilateral Fibrous Bands



B. Unilateral Short Constricted Area



C. Unilateral Partially Narrowed Area

**Fig. 1. Macroscopic appearance of the fallopian tubes.**

microscopic examination as far as 4 cm from the ring site.<sup>3</sup> Hence, although considered safe as regards pregnancy,<sup>4</sup> re-anastomosis after Falope ring tubal occlusion could be difficult.

The Filshie clip is reported to destroy only 4 mm of tube.<sup>5</sup> If the pregnancy rate is found to be low, it may prove to be the better procedure if re-anastomosis becomes necessary later.

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