CASE REPORT

Balloon Endometrial Thermoablation - An Alternative Management of Adenomyosis with Menorrhagia and Dysmenorrhoea

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Summary

A 45 years old Chinese housewife presented with menorrhagia and dysmenorrhoea due to adenomyosis failed to respond to various medical treatments. She was treated with balloon thermoablation. The total menstrual blood loss (MBL) decreased from 96.94ml before to 37.57ml, six months after thermoablation. The pictorial blood loss chart (PBLC)[1] showed similar decrease in blood loss. Dysmenorrhoea was also cured. At three year follow up, there was no recurrence. This is the first report which shows thermoablation decreases MBL objectively and can be tried to treat adenomyosis.

Key Words: Balloon endometrial thermoablation, Adenomyosis, Mean blood loss

Introduction

Balloon endometrial thermoablation was first reported in 1994 as a new treatment modality for menorrhagia. However, none of these reports give objective or scientific evidence that this procedure decreases the menstrual blood loss (MBL). This is the first case completed in a prospective study to look at this new technology objectively and scientifically in the decrease of MBL.

Case Report

Madam WLP was a 45 year old Chinese gravida 2 para 2 housewife who was referred to the author (C.C.) for menorrhagia and dysmenorrhoea for about 1 year failing various medical therapy. Examination revealed mild pallor. She had an enlarged and tender uterus, equivalent to 12 week gestational size, which was regular in outline.

The haemoglobin level was 11.6g/dl. The Pap smear, coagulation profile and thyroid function screening tests were normal. Ultrasonography of the pelvis confirmed an enlarged uterus, measuring 110mm x 57mm x 60mm amounting to a volume of 196ml. The coarse texture of the uterine wall was suggestive of adenomyosis.

The provisional clinical diagnosis was adenomyosis causing the dysmenorrhoea and menorrhagia. The conventional treatment of hysterectomy was discussed. However, she

This article was accepted: 20 June 2001

strongly refused hysterectomy and further medical treatment. She opted for the balloon endometrial thermoablation. Menstrual loss was assessed from menstruation pads (Kotex overnight pads) used[1]. She returned all the pads but remarked there was flooding when she went to the toilet and that she was unable to collect all the blood in the pads.

Hysteroscopy dilatation and currettage followed by balloon thermoablation of the endometrium (Thermochoice Uterine Balloon Therapy System, Gynecare USA) were carried out under general anaesthesia. Thermoablation was carried out according to the manufacturer's recommendation. The uterine cavity measured 12cm. Hysteroscopy showed areas of "honey comb" appearance in the uterine wall compatible with the diagnosis of adenomyosis. The temperature of the thermoablation was set at 87°C for 8 minutes. The pressure during the procedures was around 140mmHg. She was discharged well after a 6 hour observation. Histology of endometrium showed no malignancy.

She was reviewed monthly for six months with standard pads and pictorial blood loss chart[1] (PBLC) and then for three years. Her last follow up was in August 2000 (36 months after thermoablation). Since the menstrual flow was scanty, she did not use menstrual pads. She has no more dysmenorrhoea.

The PBLC scores showed a decrease from 39 (preoperation) to 10, six months after the thermoablation. The menstrual blood loss in the pads were measured to be 96.94ml before and decreased to 37.57ml, six months after the thermoablation (alkaline haematin method).

Discussion

Balloon thermoablation is a relatively new technique. It was reported that 77% to 100% of patients (n=18 to 128) were satisfied with the menstrual loss after one year. There were three randomised studies showing the balloon thermoablation is as effective as the roller ball ablation up to two years of follow up. It is particularly indicated in situations where general anaesthesia is not advisable (e.g. severe cardiopulmonary diseases), where major surgery is dangerous (e.g. bleeding tendency) or in patients who do not want hysterectomy.

Unfortunately, there are no report documenting objectively and scientifically its efficacy in the control of menstrual loss. We initiated a prospective three year study to see if balloon thermoablation objectively decreased menstrual loss. This is the first case that has completed the study and demonstrated that it truly decreased menstrual loss six months after the procedure and the outcome maintained for three years. Another four patietns who had adenomyosis and menorrhagia have been similarly treated and the results are awaited. Up till today they have been followed up for 3 years and have not shown recurrence of menorrhagia or dysmenorrhoea.

Adenomyosis had been reported to occur after endometrial electrocautery ablation[2,3]. Therefore it is arguable if endometrial electrocauteru procedures can be offered for patients with adenomyosis[2,3]. Also the risks and complication rates of endometrial electrocautery procedure may be increased with increasing size of the uterus (the increased duration of operation, fluid absorption, and anaesthetic time with extensive resection). This is the first case report to suggest balloon ablation can be tried for adenomyosis with enlarged uterus (in this case, about 12 week gestation size confirmed with ultrasound) presenting with both menorrhagia and dysmenorrhoea. It may provide a safe simple alternative to those who do not want hysterectomy, or wish to keep the uterus for psychological or sexual reasons. In theory, there should not be any additional risk as the procedure and operation time are the same irrespective of the size of the uterus.

Table I
Comparison of Estimated Costs of (A) Electrocautery Resection or Laser Ablation with (B) Balloon Thermocoagulation

COST [1]	A (Singapore dollars)		B (Singapore dollars)	
a) SET UP	3 chip camera	S$30,000	Controller unit	S$20,000
	Light source	S$11,350		
	TV Monitor	S$4,000		
	Light cable	S$760		
	Nd:YAG (100 W) machine	S$150,000		
	Hysteroscope (laser)	S$5,200		
	Or			
	Resectoscope	S$8,500		
	Distension Medium pump	S$13,800		
	Cautery machine	S$20,000		
b) Consumbles (per case)	Loop/roller ball electrode	S$80	Balloon catheter set	S$600
	Nd:YAG (600μm) fibre	S$245		
c) Operation (per case)	Theatre facility fee (S$128/15min)	S$384 (45mins)[2]	$128 (15min)	
	Surgeon's fee	S$512	$200[3]	
	Anaesthetist fee	S$120	$80[3]	
d) Summary (a, b & c)	Set up (resection)	S$90,410	Set up	S$20,000
	per case	S$180,82[4]		S$40[4]
	Or			
	Set up (laser ablation	S$203,310		
	per case	S$406.62[4]		
	Consumable (loop / roller ball)	S$80	Catheter set	S$600
	Or			
	Consumable (laser ablation)	S$245		
	Operation	S$1,016	Operation	S$408
e) per case[4]	Average: resectoscope	S$1,276.82	Average	S$1,048.00
	Laser ablation	S$1667.62		

1. Based on our hospital set up - an estimate.
2. Based on in practical setting, including the setting up and checking of equipmnet.
3. Could be performed by resident doctor and the cost would be even much lower.
4. Assume set up can be used for 500 cases.

It is possible that the dysmenorrhoea is associated with the abnormal or increased production of prostaglandin. It causes vasoconstriction of the small arteries in the uterine wall thereby causing ischaemia leading to excruciating pain. Another possibility is that the dysmenorrhoea is associated with the passage of clots and is sometimes described by the patient as "spasmodic". In our case, other than decreased menstrual loss, it is possible that the thermal ablation have destroyed endometrial glands in the superficial layer of myometrium (adenomyosis), and therefore decreasing release of prostaglandin and thus pain. In summary, balloon endometrial thermoablation warrant more scientific and objective study to document its true efficacy. If this is proven to be as satisfactory as other conservative surgical modalities, it should be offered over the other options as it is safer, simpler and faster. A simple estimation of cost in our step up suggests it may be similar if not more economical compared to the other conservative surgeries (Singapore $1,276.82 for endometrial resection, Singapore $1,667.62 for Yd:YAG laser endometrial ablation and Singapore $1,048.00 for balloon thermoablation) (Table I). In addition to treating menorrhagia, this method should be evaluated with regards to other indications like adenomyosis.

References

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