

# Suction v. conventional curettage in incomplete abortion

## A randomised controlled trial

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**Abstract** This randomised controlled trial of 357 patients who had had an incomplete abortion compared suction curettage with conventional curettage for evacuation of the uterus.

The 179 patients undergoing suction curettage had a significantly lower intra-operative blood loss ( $P < 0,0001$ ) and a significantly higher mean haemoglobin level at follow-up compared with the 178 patients who had conventional curettage. Suction curettage was a faster procedure and less painful. No difference was found between the two groups with regard to the incidence of post-abort sepsis, or the re-evacuation rate. No problems were encountered with the use of suction curettage in the presence of uterine sepsis.

In an era where blood transfusions should be kept to an absolute minimum, suction curettage will help to save blood in several ways.

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Evacuation of the uterus for incomplete abortion is one of the most common operations performed world-wide. At Harare Central Hospital, Zimbabwe, over 4 000 patients undergo evacuation for an incomplete abortion each year.<sup>1</sup> This accounts for 50% of the emergency gynaecological workload. Most patients satisfy the criteria for treatment on an outpatient basis, and the evacuation is performed under diazepam and pethidine analgesia, by means of a sharp metal curette.<sup>2</sup>

Optimal surgical treatment of incomplete abortion requires a procedure that is safe, quick and easy to perform, with minimal blood loss and few complications. Earlier reports suggested that suction curettage fulfilled some of these criteria,<sup>3-6</sup> although others reported little advantage over conventional curettage.<sup>7</sup> Differing failure rates have been reported. Higher failure rates were associated with greater gestational age: above 12 weeks by Suter *et al.*,<sup>7</sup> and above 16 weeks by Tan *et al.*<sup>3</sup> Doubt was also raised about the suitability of suction curettage in the presence of uterine infection.<sup>7</sup> Few reports directly compare suction curettage with sharp metal curettage.

Tan *et al.*<sup>3</sup> compared 89 cases of incomplete abortion treated by vacuum aspiration with 104 cases treated by curettage; patients were allocated to each group at random. There was a 1,1% failure rate (i.e. patients required subsequent curettage) in the vacuum aspiration group, and a 1,9% failure rate in the curettage group. No comparison was made with regard to the amount of blood lost with the different procedures. Another non-randomised study<sup>8</sup> found vacuum aspiration to be faster and associated with less blood loss than conventional curettage.

In view of the lack of randomised comparison, this study was performed to evaluate the use of suction as opposed to scraping of the uterus.

## Material and methods

The study was discussed and approved by the Combined Hospital University Research Committee. Patients with an incomplete abortion suitable for evacuation as an outpatient were seen in the gynaecological casualty ward by one of the authors and recruited for the study. Patients were excluded if the gestational age was greater than 18 weeks, or if there was evidence of septicaemia, peritonitis or severe hypovolaemia requiring hospital admission. The haemoglobin level was measured pre-operatively by means of a Spencer meter. All patients had a haemoglobin level of 10 g/dl or more before the operation.

Randomisation was achieved by means of a random number table. Each group allocation was sequentially placed in opaque envelopes, consecutively numbered 1 - 360, and sealed. On admission to theatre the recruited patients were randomly entered into either the suction curettage group or the conventional curettage group, according to the allocation in the next study envelope.

Analgesia was provided by intravenous pethidine (50 - 100 mg) and diazepam (5 - 10 mg). Ergometrine (0,5 mg) was given routinely with the same injection. Conventional curettage was performed with a sharp metal curette. Suction curettage was done with either an 8 mm or a 10 mm plastic Karman curette. All operations were performed by one of the authors and each of the authors performed an equivalent number of suction and conventional procedures.

At operation the size and the position of the uterus was estimated. Ovum forceps were used if considered necessary. Blood loss was measured by collecting blood by aspiration during the operation, and counting the number of soaked swabs used in each case. The time taken to perform the procedure from insertion of the speculum into an empty uterus was recorded.

Pain experienced during the procedure was assessed by the operator in theatre on a scale of 1 - 10: 0 - 3 for mild pain, 4 - 7 for moderate pain, and 8 - 10 for severe pain.

All patients were requested to return for follow-up 2 weeks later. The follow-up evaluator was unaware of the patient's study group. The haemoglobin level was measured with the same meter as used pre-operatively. Assessment was made of complications including postabortal sepsis and retained products that required repeat evacuation. The authors were informed if any patient from the study was admitted; this was facilitated by an obvious marker on the outpatient card. Statistical analysis was done by the  $\chi^2$ -test and Student's *t*-test.

## Results

Within the period of the study 357 patients were recruited. Of these 179 were allocated to the suction group and 178 to the conventional curettage group (Table I). The operation was completed according to the procedure allocated to each patient.

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**TABLE I.**  
**Characteristics of patients undergoing suction curettage and conventional curettage**

	Suction curettage (N = 179)	Conventional curettage (N = 178)
Age (yrs) (mean ± SD)	25,8 ± 6,0	25,4 ± 6,3
Parity (mean ± SD)	2,3 ± 2,0	2,3 ± 2,1
Gestational age (wks) (mean ± SD)	8,7 ± 3,1	9,1 ± 3,1
Pre-operative haemoglobin level (g/dl) (mean ± SD)	11,6 ± 1,7	11,6 ± 1,7
No. with pre-operative temperature ≥ 37,5°C	41	43
No. of pre-operative transfusions	24	17

### Intra-operative assessment

Data collected in respect of blood loss, duration of the procedure and pain experienced are set out in Table II. Suction curettage was associated with a significantly lower mean blood loss (19,2 ml) compared with 36,3 ml in the case of conventional curettage ( $P < 0,0001$ ). Significantly fewer patients in the suction group lost more than 100 ml blood ( $P = 0,009$ ). As expected, blood loss increased as gestational age at evacuation increased; this was the case in both study groups. Suction was associated with a marked reduction in mean blood loss in cases of gestational age 12 weeks and less ( $P = 0,004$ ) (Table III).

In cases of gestational age greater than 12 weeks mean blood loss remained less for the suction curettage group but the difference failed to reach statistical significance. In the conventional group, 22 patients were thought to experience severe pain during the operation compared with 9 patients in the other group ( $P = 0,02$ ).

### Follow-up

In the suction curettage group 138 (77%) patients attended for follow-up compared with 132 (74%) in the conventional group. The findings are given in Table IV. The mean haemoglobin level at follow-up was significantly higher in the suction group ( $P < 0,04$ ). Twenty (14%) patients in this group had a level of 10 g/dl or less at follow-up compared with 35 (26%) in the conventional group ( $P = 0,02$ ).

Two (1%) patients in the suction group required repeat evacuation for suspected retained products. Products were only obtained in one case. No patient in the other group needed a repeat evacuation.

Two (1%) patients in the suction group and 7 (4%) patients in the conventional curettage group presented

with mild post-abortion sepsis after discharge following operation. All resolved on antibiotic therapy on an out-patient basis.

No uterine trauma was detected in the suction group. However, 1 patient in the conventional group was considered clinically to have a broad ligament haematoma at follow-up consistent with a possible uterine perforation at the time of evacuation.

No difference was found in the duration of vaginal bleeding after evacuation between the two study groups. The mean duration of vaginal bleeding after evacuation was 4,9 days in the suction group and 5,2 days in the conventional curettage group.

### Discussion

This randomised controlled trial found that suction curettage had several advantages over conventional curettage. That suction is faster was also observed in a study by Beric and Kupresanin.<sup>8</sup> There is no problem with suction in septic cases as suggested by Suter *et al.*,<sup>7</sup> who found a failure rate of 47%. This is important in our patient population, where there is a high incidence of septic (induced) abortions.<sup>1</sup>

There is a low re-evacuation rate in this study of only 1,1%, and this is very similar to other studies<sup>3,4,7,8</sup> which found rates of 1,1, 1,6, 2,1 and 1,3% respectively.

The post-abortion sepsis rate is low. In this study it was 1% for suction curettage compared with 2,3% reported by Filshie *et al.*<sup>5</sup> The higher rate of 4% for conventional curettage supports the findings of Beric and Kupresanin,<sup>8</sup> who found the incidence of post-abortion sepsis to be three times greater after conventional curettage than suction.

There is less blood lost with suction. Since this study we have become far more sparing with blood transfusions, realising that blood can damage as well as save a patient. The Blood Transfusion Service (BTS) of Zimbabwe has screened all donated blood since 1985 and has observed a seroconversion rate for HIV in donors for the last 3 years of at least 2% annually. If a window period of 3 months is allowed, this means that 0,5% of the units of blood or plasma are infectious.

**TABLE III.**  
**Comparison of blood loss (mean ± SD) at different gestational ages (ml)**

Gestational age (wks)	Suction curettage	Conventional curettage	Significance
4 - 8	13,2 ± 17,0	24,5 ± 21,5	$P < 0,0001$
9 - 12	25,2 ± 30,4	48,7 ± 51,7	$P = 0,004$
13 - 18	40,8 ± 37,7	49,8 ± 45,4	NS

NS = not significant.

**TABLE II.**  
**Intra-operative assessment**

	Suction curettage (N = 179)	Conventional curettage (N = 178)	Significance
Blood loss (ml) (mean ± SD)	19,2 ± 25,6	36,3 ± 39,8	$P < 0,0001$
Blood loss ≥ 100 ml (No. of patients)	5	18	$P = 0,009$
Duration (min) (mean ± SD)	2,2 ± 1,4	3,4 ± 1,8	$P < 0,0001$
Duration ≥ 4 min (No. of patients)	18	67	$P < 0,0001$
Pain severity (No. of patients)			
Mild	94	64	$P < 0,002$
Moderate	76	92	
Severe	9	22	
Cervical dilatation (cm) (mean ± SD)	1,7 ± 0,8	1,8 ± 0,8	NS
Products of conception (ml)	20,9 ± 29,7	26,6 ± 38,3	NS

NS = not significant.

**TABLE IV.**  
**Comparison of findings at follow-up**

Outcome	Suction curettage (N = 138)	Conventional curettage (N = 132)	Significance
Haemoglobin (g/dl) (mean ± SD)	11,3 (1,6)	10,8 (1,9)	P < 0,04
Haemoglobin level 10 g/dl (No. of patients)	20	35	P = 0,02
Haemoglobin difference (mean ± SD)	-0,3 (1,7)	-0,7 (1,9)	P < 0,05
Duration of bleeding (d) (mean ± SD)	4,9 (3,8)	5,2 (4,5)	NS
Postabortal sepsis (No. of patients)	2	7	NS
Repeat evacuation (No. of patients)	2	0	NS
Possible uterine perforation (No. of patients)	0	1	NS

NS = not significant.

Because evacuation of retained products is faster and less painful with suction, general anaesthesia is rarely necessary and a minimum haemoglobin level can therefore not be demanded by an anaesthetist. This results in fewer transfusions.

Less demand for blood allows the BTS to be more selective in the recruitment of donors, a major advantage at a time when the donor pool is shrinking drastically because of lack of volunteers.<sup>9</sup>

A significant contributing factor with regard to blood loss in incomplete abortions is the time wasted by patients waiting for access to theatre. In extreme cases we have observed patients in this situation being transfused blood and losing blood at the same rate. If no general anaesthetic is needed and suction is used, a sophisticated theatre is unnecessary. The period from admission to treatment can therefore be shorter and this will save blood. There was a rule in the department that the haemoglobin level should be at least 10 g/dl before curettage was performed; now it has been decided that transfusion is rarely needed. If a patient is in a reasonable clinical condition on admission then salt solutions or sometimes plasma expanders will be sufficient for a suction curettage without general anaesthetic; pethidine/diazepam, a local anaesthetic or sometimes no anaesthetic at all may suffice. Observations after the evacuation will tell if discharge from hospital with subsequent iron therapy is suitable or whether a few days in hospital with haematopoietics will stabilise the patient sufficiently for iron treatment on an outpatient basis. Although the nearly 100% avoidance of blood transfusions increases the admission rate, we are happy to pay that price if blood is not used. Of course counselling about family planning is mandatory before any patient

goes home after an incomplete abortion.<sup>10</sup> This is because many abortions are not accidental, and even after a spontaneous abortion many women would like to postpone or forgo the next pregnancy. We try to be flexible so that a tubal ligation can be done before discharge. If counselling reveals that exposure to infection is a clear risk, condoms will be offered (or added) as the best possible solution.

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