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TOTAL HIP REPLACEMENT SURGERY WITHOUT BLOOD TRANSFUSION IN JEHOVAH'S WITNESSES

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SUMMARY

Uncemented total hip replacement surgery without blood transfusion is described in 12 Jehovah's Witnesses and morbidity is compared with a group who each received 3 units of blood. There were no deaths and all the patients except two, one from each group, left hospital within 3 weeks.

KEY WORDS

Organisation: Jehovah's witnesses Surgery total hip replacement.

Patients who are Jehovah's Witnesses do not accept homologous blood transfusion and even reject their own blood if direct continuity with their circulation is lost. Total hip replacement (THR) surgery may be associated with considerable blood loss [1] and successful management without blood transfusion presents a considerable challenge to surgeon and anaesthetist.

METHODS AND RESULTS

Over a 2-yr period, 12 Jehovah's Witnesses have undergone 14 uncemented total hip replacements (UTHR) at the joint replacement unit at Dorking Hospital. They were accepted for surgery if the need was unequivocal, with pain and immobility severely reducing the quality of life, with hip replacement offering the only viable treatment.

If transfusion was unacceptable, a preoperative haemoglobin of at least 11 g dl^{-1} was considered essential. If the patient was anaemic, operation was delayed while the haemoglobin concentration was increased using oral iron. Aspirin medication was stopped 10 days before surgery.

A group of patients whose progress could be compared with that of the Jehovah's Witness group, was obtained by feeding random numbers into our data base of 650 UTHR performed at Dorking by the same surgeon and anaesthetist. This randomly selected group is referred to as the transfused group.

Routine preoperative screening included full blood count, chest x-ray and ECG. Haemoglobin concentration and PCV were measured also 48 h and 10 days after operation and on discharge if indicated.

All patients received prophylactic antibiotics and underwent Ring UTHR [2] in the posterolateral position, under general anaesthesia with halothane and spontaneous ventilation [3].

Dextran 70 was used to maintain blood volume in the Jehovah's Witness group and a maximum of 1.2 g kg^{-1} was transfused over 24 h. If further blood volume expansion was necessary, a 3.5 % solution of polygeline (Haemaccel) was transfused. The transfused group received dextran 70, 500 ml and up to 3 units of blood over 24 h. Dextran 70 was used also for prophylaxis against venous thromboembolism and 350 ml was given daily for 3 days after operation.

Operative blood loss was estimated by weighing swabs and drapes and by collection in suction bottles. Measured postoperative loss was that drained from the wound into suction bottles, although this represented only a small part of the actual loss [1].

Data are presented as mean (SD or range). Statistical significance was assessed using Student's *t* test.

Patient characteristics are shown in table I. The two groups were comparable in age, sex, ASA

TABLE I. *Patient data (mean (range or SD))*

	Jehovah's Witnesses (n = 14)	Transfused group (n = 14)
Sex (M/F)	2/12	2/12
Age (yr)	68 (46–81)	67 (48–75)
Body mass index (kg m^{-2})	22.2 (17.3–25.4)	23.1 (20.2–26.9)
Smokers	0	1
ASA classification		
I	2	3
II	7	6
III	5	4
IV	0	1
Reamer size		
45–50	9	10
55–60	5	4
Operative time (min)	30.7 (15–70)	31.4 (20–55)
Haemoglobin (g dl^{-1})		
Before op.	13.3 (12.3–14.9)	13.5 (12.6–14.8)
10 days after op.	8.5 (5.3–11.2)	11.3 (8.9–12.9)
Blood loss (ml)		
During op.	321 (214)	311 (152)
48 h after op.	559 (401)	657 (248)

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classification, body mass index, operative time and reamer size. Mean preoperative haemoglobin was 13.3 (12.3–14.9) g dl^{-1} in the Jehovah's Witness group and 13.5 (12.6–14.8) g dl^{-1} in the transfused group.

In the Jehovah's Witness group, operative time was $\leqslant$ 35 min, except in one subject in whom it was 70 min because the joint was ankylosed and the bone osteoporotic; when the joint was dislocated the shaft of the femur fractured. (This patient had a prolonged stay in hospital.) In the transfused group, two patients had surgery of duration greater than 35 min (40 min and 50 min).

Two Jehovah's Witnesses and one transfused patient were hypotensive during the procedure. This was not caused by increased blood loss, and in all three the 10-day postoperative haemoglobin concentration was greater than the corresponding mean. The male Jehovah's Witness who had been hypotensive became uraemic 7 days after operation, but had recovered by the time of his discharge from hospital. Two more females in this group had problems: one developed urine retention, while the other developed a wound infection.

Average blood loss, during and after operation, was not significantly different in the two groups.

The 10-day postoperative haemoglobin concentration was taken as the stable reading for comparison and was significantly less in the Jehovah's Witness group than in the control group (table I). There was no clinical evidence of deep vein thrombosis in either group.

Two Jehovah's Witnesses returned to hospital approximately 3 months later to have the other hip replaced.

COMMENT

Our experience of uncemented total hip replacement in Jehovah's Witnesses suggests that the procedure may be safely carried out without blood transfusion. The 12 subjects studied in this group did not have more complications or a longer stay in hospital than a randomly selected group of similarly treated patients given blood transfusion.

The average haemoglobin concentration 10 days after operation was 8.5 g dl^{-1} in the Jehovah's Witness group and 11.3 g dl^{-1} in the transfused group. However, the minimum individual concentrations were 5.3 and 8.9 g dl^{-1}, respectively.

The results accord with other studies [4, 5] and confirm that surgery in Jehovah's Witness patients should not be denied if the preoperative haemoglobin concentration is adequate, steps are taken to minimize blood loss and iron stores are maintained.

REFERENCES

1. Keith I. Anaesthesia and blood loss in total hip replacement. *Anaesthesia* 1977; **32**: 444–450.
2. Ring PA. Ring UPM total hip arthroplasty. *Clinical Orthopaedics* 1983; **176**: 115–123.
3. Wittmann FW. Blood loss associated with uncemented total hip replacement: hypotension does not affect blood loss. *Journal of the Royal Society of Medicine* 1987; **80**: 213–215.
4. Benson KT. The Jehovah's Witness patient: considerations for the anesthesiologist. *Anesthesia and Analgesia* 1989; **69**: 647–656.
5. Wong DH, Jenkins LC. Surgery in Jehovah's Witnesses. *Canadian Journal of Anaesthesia* 1989; **36**: 578–585.