

raising the intragastric pH even if PAO is low. Symptoms are relieved in most patients, but in a few some remain, and these may be functional. Results were satisfactory in 80% in this study, but only in 32% with previous medical treatment.¹ Despite reports of possible acute vascular problems,⁴ cimetidine is unlikely to have caused the death of our two patients. One patient died of a pulmonary embolus only two days after starting cimetidine. The other patient aged 76 had ischaemic heart disease and severe peripheral vascular disease, and died suddenly, presumably of myocardial infarction due to his known atherosclerosis and unconnected with cimetidine.

Management of patients after the ulcer has healed remains uncertain. All of our patients were put on 400 mg of cimetidine at night; they have been followed now for two to 18 months and no ulcer has yet been known to have recurred. Further studies are needed to discover if long-term results are as good with cimetidine as with surgery. Nevertheless, cimetidine may be used successfully in patients unfit for operation.

We thank Mr J Alexander-Williams and all the consultants who allowed us to include their patients in this study, and Smith, Kline, and French Laboratories Ltd for supplying the cimetidine tablets.

¹ Stabile, B E, and Passaro, E, *Gastroenterology*, 1976, **70**, 124.

² Gray, G R, *et al*, *Lancet*, 1977, **1**, 4.

³ Baron, J H, *Scandinavian Journal of Gastroenterology*, 1970, suppl No 6, p 9.

⁴ Robinson, J J, and Mulligan, T O, *Lancet*, 1977, **2**, 719.

(Accepted 2 February 1978)

Queen Elizabeth Hospital, Birmingham B15 2TH

A M HOARE, MB, MRCP, senior medical registrar (current appointment: consultant physician, Wycombe General Hospital, High Wycombe, Bucks)

E L JONES, MD, MRCPATH, senior lecturer and consultant pathologist

C F HAWKINS, MD, FRCP, consultant physician

Surgical haemorrhage in patients given subcutaneous heparin as prophylaxis against thromboembolism

The administration of low-dose subcutaneous heparin immediately before surgical operation and for the first few postoperative days is an accepted method of prophylaxis against thromboembolism.¹ The result is a lower incidence of deep vein thrombosis, detected both clinically and by the ¹²⁵I-fibrinogen test,² and fewer deaths from pulmonary embolus.³

The estimation of operative blood loss is open to large error. It is notoriously difficult to measure operative blood loss accurately and almost impossible to assess postoperative blood loss in most cases. Nevertheless, transurethral prostatectomy is one procedure in which accurate assessment of both intraoperative and postoperative blood loss can readily be obtained. We have therefore carried out a controlled

trial to assess blood loss in patients undergoing this operation given subcutaneous heparin.

Patients, methods, and results

Sixty patients undergoing transurethral prostatectomy were randomly divided into two groups of 30. One group was given 5000 units of subcutaneous calcium heparin using single dose ampoules, 2 h before operation and then 12-hourly until the patient left hospital. The other group served as controls. The operations were carried out under general anaesthetic by one of two consultant urologists (JDJ, CJS), who were unaware of whether the patient was in the trial or was a control. Irrigating fluid was collected into a calibrated bath, and at the conclusion of the operation its volume was determined and a representative 10 ml sample of fluid taken for haemoglobin estimation. The prostatic chips were sent to the laboratory for histological examination and weighing.

A 24-hour urine collection was started at the time of catheter insertion at the end of the operation. Its volume was recorded and a representative sample of 10 ml removed for haemoglobin estimation. From these measurements, and knowing the preoperative haemoglobin, we could make an accurate estimate of blood loss during and after operation. Patients received an intravenous regimen for prevention of clot retention consisting of 4 g of epsilonaminocaproic acid in 1000 ml Hartmann's solution preoperatively; EACA, 1 g per hour in normal saline postoperatively for 12 hours; and frusemide, 40 mg during operation followed by 20 mg four-hourly for 24 hours.⁴

The two groups were comparable in terms of age, mode of presentation, histological findings, and weight of gland. The average operative and 24-hour postoperative blood loss for the two groups is compared in the table. There was no significant difference in operative blood loss, but the postoperative blood loss in the heparin group was roughly twice that in the controls ($P < 0.05$). No significant difference in haemoglobin concentrations from the preoperative level to that on the second postoperative day was seen in the two groups, reflecting the laboratory error in such measurements. Six of the patients in the heparin group required transfusion of two units of blood each, whereas none in the control group did. No patient died and there were no clinical thromboembolic complications in either group.

Discussion

Blood loss during and after transurethral prostatectomy is extremely variable. Blood pressure, the vascularity and weight of the resected tissue, the duration of resection, the type of diathermy used, and the experience of the operator are the main influencing factors. The use of a standard normotensive anaesthetic, identical instruments, and similar resection techniques provided two groups in which the only difference was the administration of heparin. Hence undoubtedly prophylactic heparin, as used in this study, increases the operative morbidity and we can see no justification for its routine use in transurethral prostatectomy, a procedure with a low incidence of thromboembolic problems.

¹ *British Medical Journal*, 1975, **3**, 447.

² Kakkar, V V, *et al*, *Lancet*, 1971, **2**, 669.

³ Sagar, S, Massey, J, and Sanderson, J M, *British Medical Journal*, 1975, **4**, 257.

⁴ Smart, C J, Turnbull, A R, and Jenkins, J D, *British Journal of Urology*, 1974, **46**, 521.

(Accepted 2 February 1978)

Southampton University Hospitals

N H ALLEN, FRCS, surgical registrar

J D JENKINS, MChIR, FRCS, consultant urologist

C J SMART, FRCS, consultant urologist

Results in the two groups of patients

	Average age (years)	Weight of adenoma (g)		Operative loss (ml)		Postoperative loss (ml)		Preoperative Hb	Postoperative Hb
		Mean	Range	Mean	Range	Mean	Range		
Controls	71.9	26	7-59	215	0-650	71	0-351*	13.9	12.1
Heparin	71.2	25	5-66	255	0-861	135	0-774*	13.6	11.8

* $P < 0.05$.