Internal iliac artery embolisation for intractable bladder haemorrhage in the peri-operative phase

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Summary

Intractable haemorrhage from the bladder wall during transurethral resection of bladder tumour is uncommon but potentially catastrophic. Internal iliac artery embolisation is a minimally invasive technique, which is now widely practised to stop bleeding from branches of these arteries in situations including pelvic malignancy, obstetric and gynaecological emergencies and trauma. We report its successful use peri-operatively, in an unfit, elderly patient with uncontrolled bleeding.

Keywords: embolisation; internal iliac artery; transurethral resection of bladder tumour

Severe haemorrhage from the bladder wall during and following transurethral resection of bladder tumour (TURBT) can be life threatening. Methods of management for uncontrolled bladder bleeding include cystoscopic clot evacuation with cystodiathermy, Helmstein balloon compression,¹ irrigation with alum solution,² and instillation of formalin,³ and may finally culminate in open surgical techniques ranging from simple packing of the bladder to cystectomy and urinary diversion.⁴ Most patients in this situation are elderly and unfit and therefore unlikely to withstand these latter morbid procedures, especially as they require regional or general anaesthesia. Prolonged hypovolaemia and the associated massive blood transfusions that may be required are also poorly tolerated.

Internal iliac artery embolisation has been successfully used in controlling bladder haemorrhage from terminal pelvic malignancy for over 20 years.^{5,6} This case report illustrates its added value in the transurethral peri-operative phase.

Case report

A frail 79-year-old man with superficial, high-grade transitional cell carcinoma of the bladder (G3 pT1) kept on regular surveillance for 3 years, was admitted for transurethral resection under general anaesthesia of recurrent bladder tumour. There was no history of recent haematuria and his haemoglobin level was 10.2 g/dl. Clotting profile was normal.

Cystoscopy revealed an extensive tumour recurrence predominantly on the left side and occupying over 70% of the bladder surface

area. Resection of the tumour was difficult due to excessive bleeding. After 25 minutes, he became cardiovascularly unstable and was transfused with two units of blood. It was not

Figure 1 Pre-embolisation subtraction arteriogram showing selective contralateral catheterisation of the left internal iliac artery with significant vascular supply to the bladder wall tumour

Figure 2 Post-embolisation subtraction arteriogram showing occlusion coils bilaterally within the anterior divisions of the internal iliac arteries

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possible to control the bleeding endoscopically and he was deemed too unfit to undergo an open surgical procedure. Immediate transfer to the radiology suite was organised for bilateral internal iliac artery embolisation. A pelvic arteriogram was performed and the anterior division of the contralateral internal iliac artery supplying branches to the left bladder wall, was identified. This illustrated the significant vasculature supplying the tumour in the left bladder wall (figure 1). Embolisation of the anterior division of the left internal iliac artery was carried out using occlusion coils and repeated on the right side to prevent any collateral circulation (figure 2). Immediate control of the haemorrhage was achieved without complications. His haemoglobin level was 9.7 g/dl following two further units of blood and he made a full recovery. He declined any further surgical intervention, but was well at 3 months with no further haematuria.

Discussion

Internal iliac artery embolisation for the palliation of severe bladder haemorrhage in inoperable malignancy results in good initial control in 80–100% of patients. The duration of control is usually life long in these terminal cases.⁷ Complications arising from the procedure are uncommon and include sepsis, gluteal pain, gait disturbances and, very rarely, bladder necrosis.⁸

Summary points

- severe bladder haemorrhage from surgery or pelvic malignancy *per se*, can be difficult to control and is life threatening
- internal iliac artery embolisation is a minimally invasive technique which successfully stems intractable haemorrhage in the majority of cases
- early referral of suitable patients to the radiologist reduces morbidity related to prolonged hypovolaemia and associated blood transfusions and negates the need for more radical open surgical procedures

This case report illustrates the value of the procedure in the acute transurethral peri-operative phase, when haemostasis is proving to be difficult to achieve. Previous reports⁹ have shown the efficacy of embolisation in the early postoperative period but this was undertaken only after massive blood transfusions had been given for prolonged hypovolaemia, with the attendant risks including consumptive coagulopathy, multi-organ failure, transfusion reactions, and possible blood-borne infections. This case demonstrates that providing there is good liaison between urologist and radiologist, early peri-operative referral of an unfit patient for arterial embolisation results in minimal total blood loss and therefore avoids the morbidity of multiple blood transfusions. It also avoids the use of more invasive techniques to achieve haemostasis.

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Good prognosis in thyroid cancer found incidentally at surgery for thyrotoxicosis

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Summary

An analysis of the outcome of thyroid carcinoma incidentally discovered in patients undergoing surgery for hyperthyroidism is presented. Among 986 patients with differentiated thyroid cancer, 23 had presented with symptoms and signs of hyperthyroidism. Graves' disease was diagnosed in 11, multinodular goitre in eight and toxic adenoma in four. Following thyroidectomy, histology revealed papillary (18), follicular (four) and Hurthle cell (one) carcinoma. Tumour size ranged from 4 mm to 5.5 cm, multifocality was detected in three patients, and lymph node involvement in one. Two patients (one with associated Graves' disease, one with multinodular goitre) relapsed locally and required further surgery; one developed distant metastases and died 7 years after initial presentation. Two patients died of unrelated causes; the remaining 20 patients are alive and well with a median follow-up of 16 (1–34) years. Differentiated thyroid cancer found incidentally at surgery for hyperthyroidism has a good prognosis.

Keywords: thyroid neoplasms; thyrotoxicosis; thyroidectomy

Previous studies have suggested that thyroid cancer occurs more frequently in patients operated for hyperthyroidism than in euthyroid patients.^{1–4} The reported incidence of thyroid carcinoma found at surgery in hyperthyroid patients ranges from 0.21% to 8.7% depending on the criteria used to select patients for surgery, patient characteristics and history of previous neck irradiation. More recently, it has been suggested that thyroid cancer associated with Graves' disease is highly aggressive and should be treated vigorously.⁵ Other investigators⁶ have not confirmed this finding and the issue remains controversial. We report our experience in patients found to have differentiated thyroid cancer at thyroidectomy for hyperthyroidism.

Patients and methods

Between 1949 and 1997, 986 patients with differentiated thyroid cancer were treated at the Royal Marsden Hospital, which serves as a tertiary referral unit for patients with thyroid disease. Twenty-three patients (19 women, four

men, median age at diagnosis 35 years, range 21–78 years) had presented with clinical features of hyperthyroidism. The duration of hyperthyroidism ranged from 4 months to 13 years (median 3 years). Graves' disease was diagnosed in 11 patients based on clinical findings, the presence of circulating thyroid antibodies and a uniformly increased ¹³¹I thyroid uptake scan appearance.

Toxic multinodular goitre was diagnosed in eight patients and autonomously functioning thyroid adenoma in four patients based on clinical and scan appearances. Graves' disease with a palpable nodule was not diagnosed in this series.

Subtotal thyroidectomy was performed initially in all cases. Indications were: recurrent hyperthyroidism after medical treatment (7), physician preference (5), large goitre responding poorly to medical treatment (4), persistent drug effects (3), enlarging nodule (2) and patient preference (2). In 13 patients, total thyroidectomy was subsequently performed followed by 3 GBq of ¹³¹I to ablate residual tissue.

All patients were followed-up according to our thyroid cancer protocol at intervals increasing from 6 months to yearly. At each visit, patients were clinically assessed and serum thyroglobulin was estimated. Where whole body ¹³¹I scans demonstrated persistent uptake, further ablation with radioiodine was given.

Results

Eighteen papillary, four follicular and one Hurthle cell carcinoma were found incidentally in the thyroidectomy specimens. In three cases, more than one focus of cancer was identified. Tumour size ranged from 4 mm to 5.5 cm; 12 tumours were less than 1 cm (T1), five were 1–2 cm and five were over 2 cm in diameter. Five (45%) of the tumours in the Graves' patients, two (50%) in the toxic adenoma patients and four (57%) in the multinodular patients were over 1 cm in diameter. Only one patient had evidence of lymph node involvement at presentation.

Follow-up ranged from 1–34 years with a median of 16 years. Two patients suffered a local recurrence; one with associated Graves' disease, the other with an underlying multinodular goitre. A 2.5 cm follicular thyroid cancer was discovered at thyroidectomy in the Graves' patient. She underwent total thyroidectomy and received ablative radioiodine but despite this, developed lymph node recurrence 5 years after presentation. Block dissection of

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