MASSIVE HAEMORRHAGE FOLLOWING PELVIC FRACTURE

Report of a Case

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A man of twenty-three was involved in a road accident in November 1966. He sustained a minor head injury with temporary loss of consciousness, superficial abrasions to the face and hands and bruising over both iliac crests. When first seen his blood pressure was 100/60 with a pulse rate of 100 per minute. There was clinical evidence of fracture of the pelvis and radiographs showed bilateral fractures of both pubic rami, with displacement on the right side (Fig. 1). Intravenous infusion was begun at once with Macrodex and later with blood. Two and a half litres of blood were transfused during the next sixteen hours with improvement of blood pressure to 110/70. A rounded swelling was then apparent above the pubis, extending as far as the umbilicus. Only a small quantity of urine had been passed during this time

FIG. 1

Radiograph showing bilateral fractures of the pubic rami with displacement on the right side.

and catheterisation showed that there was no vesical injury, but a cystogram showed that the bladder was much elongated, compressed and displaced to the left (Fig. 2). In the belief that the haematoma was not increasing in size, intravenous infusion of blood was continued, followed by dextrose saline. Adequate diuresis occurred next day, but after a further twenty-four hours the patient's haemoglobin was still only 50 per cent. There was generalised discomfort with a low fever. On the next day two litres of blood were transfused and peripheral bruising became apparent. In view of the low haemoglobin, one further litre of blood was

transfused over the next twenty-four hours. The patient's general condition improved slowly, but five days after the injury there was a sudden deterioration of his condition. The blood pressure fell from 140/80 to 110/60 and massive oedema of the right leg extending from the iliac crests to the toes occurred. The suprapubic swelling also appeared to have enlarged. The appearance of the limb suggested massive iliac and femoral venous thrombosis and a further haemorrhage within the pelvis could not be excluded. It was decided to carry out an exploration, to ligate any torn major vessels and to perform right venous thrombectomy.

FIG. 2

Cystogram showing elongation and compression of the bladder and displacement to the left.

Operation was carried out through a long right paramedian incision. A large paravesical haematoma of about one and a half litres was evacuated, after which profuse arterial bleeding was seen to come from a vessel overlying the fracture of the right ilium. After further dissection the bleeding was seen to be due to an incomplete division of the right superior gluteal artery. The artery was divided, both ends were ligated and additional bleeding points in the fractured bone were occluded with wax. A further three litres of blood were transfused during the operation. The common femoral vein was then exposed and opened. Fresh thrombus, extending from the level of the knee as far up as the confluence of both common iliac veins, was removed. There was an immediate free flow of blood from both proximal and distal ends. After the wound was closed, administration of heparin was begun.

Next day the patient's general condition was satisfactory and the oedema of the right leg was less. After a week there was scarcely any oedema in the right leg and one week later both legs were of equal size.

DISCUSSION

Haemorrhage is invariable in fractures of the pelvis but is not usually excessive, transfusion of about one and a half to two litres of blood being sufficient to replace loss. Continued bleeding is recognised, however, as a cause of death after pelvic fracture, and Perry and

McClellan (1964) in recording a mortality of eighteen patients from a group of sixty-seven having fractures of the pelvis showed that ten died from haemorrhage. Eight bled from the fracture, one from a divided external iliac vein and one from an open injury of the common femoral artery. All other patients who died were pedestrians, and in their series injuries of this type were uncommon in car occupants. Hauser and Perry (1966) reported a series of 196 cases of fractured pelvis. Thirty-seven (19.4 per cent) of their patients died, nine from pelvic bleeding; again eight were pedestrians, only one being a car passenger. They advocated ligation of the internal iliac artery if rapid response to transfusion of whole blood is not forthcoming. This is supported by Miller (1966) who believed that bleeding in most cases arises from ruptured branches of the internal iliac vessels running against the side wall of the pelvis. Ligation of the internal iliac vessels was considered in our case and would have been undertaken if we had failed to find the source of bleeding. There is a risk, however, in ligation of internal iliac vessels, particularly the left internal iliac artery, in older patients. If atheromatous disease of the lower aorta and its mesenteric branches is present a significant percentage of the blood flow to the left colon may be derived from the internal iliac artery, and ligation of this vessel may be critical. However, if haemorrhage can only be controlled in this way it appears to be a justifiable procedure. Due precaution should then be taken to detect any early lesion involving the descending or sigmoid colon.

Venous thrombosis is a common sequel to fractured pelvis; this is doubtless due to impaired venous flow from a combination of compression by a haematoma together with stasis from necessarily prolonged bed rest. We believe that the massive venous thrombosis in our case involving the whole of the right ilio-femoral venous system was directly due to the extremely large haematoma. Venous thrombectomy as advocated by Mavor (1967) for treatment of early cases of this condition appears particularly suitable, especially when combined with removal of the precipitating haematoma. The rapid resolution of oedema in the limb in this case supports the view that patency of the vein had been maintained and no subsequent thrombus formation had occurred.

This type of arterial injury appears to be uncommon in pelvic fractures in general and in car occupants in particular. It differs considerably from the usual type of arterial trauma associated with pelvic fractures, which in our experience has usually been of the closed variety with intimal tear and arterial thrombosis. Two cases of this type have been encountered during the past twelve months out of a total of thirty-eight patients with fractured pelvis. The presenting feature in both of these was limb ischaemia and hypotension. When conservative measures fail to control systemic blood pressure in the presence of increasing haematoma, we consider that exploration should be constantly borne in mind and undertaken early.

SUMMARY

1. A case of fractured pelvis with massive haemorrhage from the right superior gluteal artery and thrombosis of the right ilio-femoral venous system is reported.
2. The treatment included ligation of the artery and extensive thrombectomy. Ten litres of blood were transfused.

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