Intraoperative Internal Iliac Artery Embolization as a Method of Treating Bladder Haemorrhages

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A simple and effective method of controlling haemorrhage from the bladder by means of intraoperative embolization is described. This method can be used in hospital departments which do not have surgical radiology laboratories at their disposal. It compares well with the method of internal iliac artery ligation, since by inhibiting the formation of collateral circulation it prevents recurrences of haemorrhage.

Haemorrhage of the bladder is usually caused by tumours or by lesions resulting from irradiation. Since 1973 such haemorrhages have been treated by embolization of the internal iliac artery which, with the improvement of the technique and the introduction of new embolizing materials, has become a valuable and efficient method [4, 5, 6, 8, 10]. However, it requires a well-equipped vascular laboratory with a trained surgical radiologist. Therefore, it is not possible in many hospitals to carry out immediate embolization, particularly when the intensity of the haemorrhage and a sudden deterioration of the patient's condition necessitate emergency measures.

In 1967, in the Department of Urology in Białystok, a method of intraoperative artery embolization was applied with very good results in the case of a patient with bleeding carcinoma of the bladder [3]. Since then only four operations of this type have been performed, because in cases of bladder haemorrhage internal iliac artery embolization is applied, a vascular catheter being introduced through the femoral arteries by the Seldinger method.

The aim of this paper is to present this method which is to be recommended particularly in hospitals which have no access to a surgical radiology laboratory.

Material and methods

From 1976 to 1979, 4 patients (3 men and 1 woman), admitted to hospital with bladder haemorrhage, were treated. Their ages ranged from 62 to 76 years. In three cases the neoplasm was classified as T₄ and in one case as T₃. In three patients infiltration of one or both vesical orifices of the ureters was found.
Intraoperative embolization was performed in three patients in whom the neoplasm had infiltrated the ureteral vesical orifices, and transplantation was necessary. In one case, embolization was performed to save the patient’s life after unsuccessful attempts to control tamponade of the bladder.

**Intraoperative embolization technique**

Under general anaesthesia, the abdominal cavity was opened with a medial-inferior incision. After incision of the parietal peritoneum, the common iliac arteries were exposed together with the initial sections of the internal iliac arteries. Ligatures applied to the latter were tightened for a time in order to prevent the embolizing material from flowing back into the common iliac arteries. A plastic Viggo type cannula was then introduced first into the right and then into the left internal iliac artery below the superior gluteal artery branch. Through the cannula, particles of spongostan suspended in physiological saline were injected, several at a time, until the pulse in the farther section of the internal iliac artery ceased. From time to time the ligatures were released in order to increase the embolism in the artery. On an average, complete occlusion of the artery was achieved after about 10 minutes. For the embolization of an artery on one side, an average of about 1 cu.cm of dry substance was used. Embolization was always performed bilaterally. After the operation, the ligatures were removed from both arteries. In the case of the last two patients the arteries were additionally ligated after introduction of the spongostan suspension (Fig. 1).

The haemorrhage ceased completely after the embolization in all the patients. In the postoperative period, the patients complained of severe pain in the region of the lesser pelvis. A rise in body temperature was noted and two patients suffered from nausea and vomiting. The postoperative observation period lasted 6–12 months. Three patients died after the control period, one survived for