Leakages of abdominal anastomosis after arterial reconstruction

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The anastomotic leakages, occuring after a revascularizing procedure by means of prosthetic grafts, involving abdominal aorta or its branches, can schematically grouped into 3 main types:

A) Leakages producing clearly infected pseudoaneurysms (macroscopic evidence of pus);

B) Leakages producing not patently infected pseudoaneurysms (no macroscopic evidence of pus);

C) Leakages causing vasculoenteric fistulas.

Clinical material

A survey of the anastomotic leakages occurred in our experience of 1671 cases of reconstructive vascular operations, utilizing synthetic prostheses, performed from 1965 to 1980 was made, for the purpose of determining the incidence, the etiology, the clinical appearance and the results of therapeutic procedures of this dreaded complication.

The incidence of every type of leakage is examined in the table 1.

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Etiology

Many factors may lead to a leakage of anastomosis; however they can be grouped in two main cathegories:

I) *Imperfect accomplishment of surgical procedure*

a) excessive tension of the graft;

b) sutures placed too close to the edges;

c) sutures performed on disobliterated segments.

In all these eveniences leakage results from the cut of arterial wall.

d) breakag of the end of a continuous suture Leakage comes from the unsewing of the anastomosis.

e) too long prosthetic graft;

f) partial or poor covering of the graft (incomplete separation from bowel).

In these cases leakage proceeds from erosion of intestinal wall and subsequent contamination of suture line.

II) *Graft infection*

a) predisposing factors: presence of lymphatic or haematic collections;

b) raising factors: direct bacterial implantation during the intervention; intercurrent bacteriaemias and conse-

TABLE I.

Types of leakage	Observed cases	Arising time after intervent.	Successful reintervent.
A	2 (0.11%)	2 years	—
B	9 (0.53%)	3 m. - 2 years	6
C	11 (0.66%)	4 m. - 9 years	2

The overall incidence was 1,31%.

quent bacterial implantation on the prosthesis.

In these case the leakage is consequent to a necrotic arteritis which causes graft datatching.

Symptomatology

Symptoms may vary in relation to the presence or absence of an infective status associated to pseudoaneurysms and depending on the existence of a vasculo-enteric fistula.

I) Isolated pseudoaneurysms (undemonstrated infection): abdominal pulsating mass; sometimes an acute ischemic picture involving the limbs (mono-or bilaterally); onset of haemorragic shock in case of rupture of the pseudoaneurysm.

II) Infected pseudoaneurysms: deceitful and slight signs of infection (increase of the VES, leukocytosis, septic fever); perceivable mass in epigastric region.

III) Vasculo-enteric fistulae: impressive and relapsing haemorrages; a shock picture.

Diagnosis

The diagnosis is easy when it is possible to appreciate a palpable pulsating mass in the meso or epigastric region and there is the anamnestic data of a pregressed vascular reconstructive procedure.

The most useful diagnostic investigations include a roentgenographic study of the digestive tract, the echotomography, the TAC and the aortography.

However it is often very difficult to get significant diagnostic proofs when leakages have not yet produced large pseudoaneurysms or in the presence of vasculo-enteric fistula with intermittent and moderate bleeding. In any case it is always necessary to pay attention to the possibility of an anastomotic leakag in all the patients who underwent in the past a reconstructive aortic surgery.

Therapy

When a vasculo-enteric fistula or an infected pseudoaneurysm occurred, the following procedure must be put into effect: complete removal of the graft; closure of aortic stump, oversewing it with monofilament sutures; administration of systemic specific antibiotics; revascularisation, if necessary, of non viable extremities by extra-anatomic by passes.

Recently, some Authors suggest the possibility of using autogenous veins and arteries for reestablishing blood flow in an infected field (Ehrenfeld).

Prevention

Since the extremely high risk for the life connected to the set up of an anastomotic leakage, all the measures devoted to preventing the occurrence of such a severe complication should be carefully adopted.

The most important prophylactic measures are briefly summarized: extremely careful asepsis; use of a plastic drape to cover the operative field; diligent haemostasis of the retroperitoneal tissues, with the interposition, if necessary, of an omental strip between prosthesis and duodenum, in order to establish a biologic barrier; peroperative antibiotic prophylaxis (we follow a short term prophilactic scheme administering a single dose of broad spectrum antibiotic association: lincomycin 600 mg and tobramycin 100 mg in 500 cc of saline solution intravenously); use of teflon felts to reinforce the suture on disoblitereted arterial segments; any concurrent intervention on the digestive tract should not be allowed; when performing the retroperitoneal suture any duodenum puncture should be avoided; after aneurysmectomy the residuals of aortic wall must be oversewn on the prosthesis.

Conclusions

The success of treatment of the aortic proximal anastomotic leakages, in our opinion, depends on a higly aggressive surgical philosophy. Only the complete removal of the graft, if signs of infection are evident or a vasculo-enteric fistula is present, may offer a reasonable chance of healing.

Retroperitoneal reconstruction, even though sometimes successfully performed, doesn't always prevent from the risk of the development of a new pseudoaneurysm.

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