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ATLAS OF ARTERIAL SURGERY

BASICS OF ANATOMY AND TECHNIQUE

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Volume I

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PICCIN
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PREFACE

It has been a little over 100 years, that Alexis Carrel first introduced his revolutionary technique of surgical reconstruction of blood vessels. Since the 1950's, vascular surgery has progressed by leaps and bounds and in the past two decades the endovascular revolution transformed the face of arterial surgery.

This attractive Atlas, compiled by the talented and enthusiastic Italian surgeons Antonino Cavallaro and Antonio V. Sterpetti from the school of Professor Sergio Stipa, and by the anatomist Fabrizio Barberini, all from the "Sapienza" University of Roma, presents the full spectrum of arterial surgery as it is practiced today: from basic vascular surgery techniques and simple or complex open surgical reconstructions to endovascular and hybrid arterial and aortic procedures.

The authors have been aided by expert contributions from an international group of 76 surgeons from nine countries of the world: this atlas under Italian leadership has become a successful multi-national venture of excellence in vascular surgery.

The technical details of the interventions are beautifully illustrated in black and white and in color by Bernard Luraschi, and the large number of intraoperative colored photographed images are masterfully enhanced by computer to provide fine technical details and the exact underlying surgical anatomy.

These, together with a well written text, provide essential information on vascular surgical procedures not only for vascular trainees but also for the young and the more experienced vascular surgeons.

To quote Charles H. Mayo, a master surgeon of exceptional technical skills, this atlas is "not for those filled with principles, or the why, but for those still interested in technique, or the how."

Surgical technique and skill are most important, but they are never enough. As Horsley once said "The career of a surgeon who merely is a cutter is of very doubtful benefit to himself and the humanity." However, precise surgical technique is a quintessential part of the success of an operation. This includes careful planning, thorough knowledge of anatomy, flawless execution of the procedure, utmost attention to details and keeping a masterful balance between taking risk and avoiding adventures. All these, only when coupled with a constant desire to help your patient and do no harm, will transform an operator to become a master surgeon. This is how the craft of surgery turns into art. Legendary surgeons like Charles H. Mayo, Michael de DeBakey, Stanley Crawford, Denton Cooley, Hans Martin Becker, Andre Thevenet, Pietro Valdori or Oliver Behrs, among others, were not renowned because of their unique technical skills, what they of course had, but mainly because of their overall conduct of the operations performed for the benefit of their patients.

Most textbooks will teach you about the science in vascular surgery: about investigation, evaluation, prevention and treatment of vascular diseases. The Atlas of Arterial Surgery by Doctors Cavallaro, Sterpetti and Barberini, will open you the way to be fully competent in the art of vascular surgery. This is a unique volume: it brings
together the arts of printing, modern book making, superb medical illustrations and color photography with the multifaceted and exciting art of contemporary vascular and endovascular surgery.

Enjoy reading and consult frequently this beautifully presented, instructive and artful contribution to vascular surgery.

Rochester, MN, May 2011

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Fig. 1.55
Endarterectomy of the common carotid artery.

Fig. 1.56
Endarterectomy of the first part of the external carotid artery and transection of the plaque.

Fig. 1.57
Reimplantation of the internal carotid artery onto the common carotid artery. The parachute technique is used for the passage of the initial stitches. A short longitudinal arteriotomy has been made on the external carotid artery.
Exposure of the vessels and nerves of the inguino-femoral region, left limb; the iliopsoas muscle has been removed.

Fig. 4.1
1 - femoral nerve
2 - femoral artery
3 - deep femoral artery
4 - lateral circumflex femoral artery
5 - femoral vein
6 - greater saphenous vein (a = arch of the greater saphenous vein)
7 - saphenous nerve
8 - lateral musculocutaneous nerve
9 - nerves of the quadriceps muscle of femur
10 - sartorius muscle
11 - long adductor muscle
12 - rectus femoris muscle
13 - vastus medialis muscle
14 - vastus lateralis muscle
15 - tensor muscle of fascia lata
Repair for type V popliteal artery entrapment, right limb

Skin incision for the posterior approach to the popliteal artery.

Fig. 4.66a
Transverse section of the right popliteal fossa, passing through the femoral condyles; up-down view.

Fig. 4.66b
Same section; the drawing shows the way for the posterior approach to the popliteal vessels.

Fig. 4.67
Posterior approach to the right popliteal artery; the S-shaped incision and the skin flaps; the lesser saphenous vein (1) is being divided between ligatures.
Fig. 4.76
Both the popliteal vein (3) and artery (4) have been looped with vessel loops. The proximal extreme of the medial head of the gastrocnemius muscle (5) is exposed for a convenient length: it is evident that its insertion onto the femur is much more lateral than usual.

Fig. 4.77
The *anomalous* muscle is divided using the electric cautery.
Fig. 5.17
The graft is then pulled from within itself.

Fig. 5.18
The brachiocephalic vessels, usually with a single aortic island, are attached to an opening in the graft.
Transperitoneal exposure of the suprarenal aorta

Fig. 6.16
Intraoperative picture, at the end of the procedure, in a patient with a suprarenal aortic aneurysm and an infrarenal aortic aneurysm, being free from disease the segment of aorta with the origin of the two renal arteries. Exposure of the aorta through the medial visceral rotation, leaving in place the left kidney. Suprarenal aortic graft and infrarenal aorto-biiliac graft. Separate grafts to the superior mesenteric artery and to the coeliac trunk from the upper aortic graft. The evident wide mobility of the left renal vein was obtained through division of its tributaries.

Fig. 6.17
Schematic drawing showing the operative field after medial visceral rotation inclusive of mobilization of the left kidney to the right. Division of the diaphragm is performed to obtain control of the distal thoracic aorta.
In general, medial visceral rotation leaving the left kidney in place is preferred, as this allows full exposure and access to the visceral vessels and to the right renal artery.
The preferred incision is transverse supraumbilical as for aortorenal bypass.

Fig. 6.96
Mobilization of the right colon and of the hepatic flexure; extended Kocher-like maneuver to mobilize the duodenum and the pancreas, exposing the renal vessels, the inferior vena cava and the aorta.