HISTORICAL NOTE

Ivan F. Sabaneev (1856–1937)
The Surgeon Who First Described Thromboembolectomy

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In most historical papers on the management of acute limb ischaemia, credit for inventing thromboembolectomy is ascribed to Ivan Sabaneev (or Ssabanejff) who published a paper in Russian Surgical Archives in 1895. Sabaneev graduated from the Medical Faculty of the University of Kiev in 1882. Between 1886 and 1887 he trained in ENT and General Surgery at the Military Academy, St Petersburg and then became a practising surgeon in Odessa where he stayed until 1908. He was obviously a man of immense energy and wrote a thesis on “osteoplasty of the nasal cartilage” whilst at the Military Academy, for which he was awarded the degree of Doctor of Medicine in 1887. Although specialising in ENT surgery in various hospitals in Odessa, like many surgeons of his time he managed a wide variety of surgical conditions; he wrote papers on an extra-articular incision for knee joint surgery (1896), extra-abdominal hernias (1897) and the application of gastric fistula in oesophageal strictures (1890). He was appointed senior surgeon in the regional hospital at Odessa in 1897 where he worked until 1908. It was during this prolific time, just before his appointment as senior surgeon, that he wrote his one and only paper on arterial surgery.

The problem with arterial surgery at that time concerned blood vessel repair, safe techniques for operating on arteries were not yet available. The idea of a method to suture blood vessels came to Sabaneev, of necessity, when he damaged the femoral vein during an operation for enlarged groin lymph nodes. During a lymphadenectomy operation in a 34-year-old farmer, Sabaneev injured the femoral vein and could not repair it with interrupted silk sutures. He therefore mobilised the femoral vein using ligatures as slings to prevent bleeding and then placed subadventitial sutures 4 mm from the edge of the venotomy to secure haemostasis (Fig. 1). When the patient recovered with nothing worse than a wound infection, Sabaneev had the confidence to attempt further arterial surgery.

The case described in his paper was of a 28-year-old nurse who was initially admitted to hospital with severe rheumatic endocarditis. During admission she developed an embolus to the right leg causing severe ischaemia. Her leg was “anaesthetic to pinprick and no blood dripped from the needle puncture site”. The pulse in the right groin was weak. The usual treatment for arterial occlusion at that time was amputation but the patient, being a nurse, did not wish to wait for demarcation as was conventional. Sabaneev decided to operate, with the intention to perform an amputation, but he determined to try initially to remove the occluding thrombus to improve the chance of the amputation healing. Under chloroform anaesthetic he opened the femoral artery, which was surrounded by inflammation, through a longitudinal incision 3–4 cm long. He was able to remove some proximal thrombus, however, the arteries remained occluded distally. Sabaneev thought if he explored the superficial femoral...
artery more distally it might be possible to infuse saline through the artery, collecting the effluent through the femoral vein and continuing until the drainage became clear. Unfortunately his patient deteriorated during the surgery and he resolved to proceed directly to Gritti-Stokes amputation. To try and save as much tissue as possible he did not simply ligate the artery but attempted to repair the arteriotomy. He placed five interrupted number 1 silk sutures on a round bodied needle using his subadventitial technique, as previously described. He was pleased to find once the operation was completed that the femoral artery remained patent. Sadly, his patient deteriorated over the next few days and succumbed from infection.

It is not clear whether Sabaneev performed further arterial operations: no published material is available, though Alexander Jassinowsky, also from Odessa, reported a series of end to end anastomoses in rat carotid arteries. Sabaneev did, however, organise probably the first internship which included instruction in vascular surgery for both medical students and postgraduate trainees. The internship at Odessa involved a 4 year training programme and included tutorials and an on-call rota, with residential facilities and a canteen. A list is available of the first 17 interns. The training programme was not popular with the hospital authorities who regarded it as a source of "harmful ideas". It was reduced to 2 years and subsequently cancelled. Sabaneev left the hospital and went into private surgical practice in 1908.

Although it is recorded that John Hunter attempted to remove thrombus from the popliteal artery during amputation to try and improve skin flap healing, most historical treatise report Ivan Sabaneev as the surgeon who first suggested thromboembolectomy for acute arterial occlusion. At the time, direct arterial surgery and repair was almost unknown: the only operation done on arteries was ligation. Hallowell is credited with the first arterial repair in 1761, but Sabaneev was among the few surgeons of his time to succeed in repairing both arteries and veins. It was another 20 years before reports on direct arterial repair and reconstructive surgery began to appear with any frequency. The first successful embolectomy was not described until 1911. Sabaneev was obviously a surgeon unafraid of risks, and with the foresight to realise that formal surgical training was paramount. His ideas of the management of acute leg ischaemia predicted surgical techniques of embolectomy and, presently experimental, isolated limb perfusion thrombolysis. In the centenary of the publication of his paper he could hardly imagine that surgery might be replaced by thrombolysis for acute ischaemia. Sabaneev's diverse publications and his vision are evidence of greatness and it is sad that this ultimately resulted in conflict with a repressive authority.

Authors' note

This paper is based on a translation of Sabaneev's original Russian manuscript by one of us (IAI-Z) and a comprehensive search of medical history facilities in several libraries including Glasgow University, Welcome Unit for the History of Medicine, Leeds Russian Archive, The Society for Co-operation in Russian Studies and The Russian National Library, Moscow. Despite this search, information is sparse and no photographs of Sabaneev could be found. The authors would be interested to hear from anyone who has additional information.

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References


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