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Sartorius muscle: the major significance of its innervation and vasculature in the survival of the muscle flap

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Introduction: The Sartorius muscle (SM) is the longest muscle of the body and the most superficial muscle of the anterior thigh. It has been widely used for complex femoral wounds closure.
Methods: The aim of this study was to provide detailed information of SM innervation, vasculature and anatomical topography references in the body surface of SM nervous and arterial pedicles. A literature review was performed on SM anatomical studies published in the last two decades and a detailed description of SM innervation and vasculature has been quoted.
Results: SM has been classified as type 3, according to its nerve supply pattern, with multiple motor nerve branches deriving from the same trunk. Nervous branches originating from the femoral nerve innervate SM. Most of the studies reviewed showed single or double extramuscular branch (one study showed three to four branches), three to five intramuscular branches and multiple further divisions. SM has been classified as type IV according to its vasculature because it has six to ten segmental pedicles. Most of the studies showed four to nine pedicles that further split into two or more branches after entering the muscle. Source arteries: superficial femoral artery, deep femoral artery, superficial circumflex iliac artery, descending branch of lateral circumflex femoral artery, saphenous artery, descending genicular artery, popliteal artery. The diameter of these pedicles as well as their distance from the anterior superior iliac spine has been described. SM flaps have been described in the literature with multiple indications such as coverage of femoral vessels and occasionally skin defects after inguinal lymphadenectomy or sarcoma excision, vascular graft salvage, genitourinary tract reconstruction, chronic knee osteomyelitis, knee reconstruction and reconstruction of trochanteric pressure sores.
Conclusion: Different studies conclude that SM can be potentially based on a single major pedicle without a surgical delay. However, the possibility of surgical delay to increase the flap viability should be always considered. There is still lack of detailed data regarding SM nervous and vascular distribution, which can lead to successful construction of SM surgical flaps.