

The blood and nerve supply of the long head of the biceps femoris muscle; its possible use in dynamic neoanal sphincter.

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Abstract

OBJECTIVES:

Dynamic graciloplasty is used commonly as a neoanal sphincter to reconstruct the damaged anal sphincter. However, infection of the transposed gracilis and consequent failure of anal reconstruction has been recorded in some cases. An alternative to gracilis muscle should be searched for to reconstruct and replace the anal sphincter.

STUDY DESIGN:

30 fresh cadavers (20 adult, 10 stillborns) had been used in this study.

MATERIALS AND METHODS:

The external and common iliac arteries were injected with a mixture of 50% lead oxide and 50% red latex. The long head of biceps femoris was exposed to identify its neurovascular bundle and estimate the whole length of the thigh, the whole length of the long head of biceps and the dominant neurovascular pedicles of the long head of biceps muscle. The functional length of the biceps muscle that is used during the muscle rotation was also calculated. The diameter of the arteries supplying the muscle was measured at their proximal and distal ends using a Swiss mechanic caliber. The thighs of both sides of each cadaver were X-rayed in order to study the vascular architecture of the muscle, and then the biceps muscle was dissected and removed then X-rayed to study the internal vasculature and anastomosis.

RESULTS:

The study showed that there were four dominant arterial pedicles to the long head of biceps femoris muscle in addition to several minor arterial branches in 90% of the studied cases. In all cases, the inferior gluteal artery gave one major arterial pedicle to the proximal end of the muscle. The radiological study of the vasculature of the long head of biceps muscle during the current study showed the presence of anastomosing arterial loops between the internal iliac, external iliac, femoral and profunda femoris arteries. It also showed the presence of extensive intramuscular anastomosis between the intramuscular branches of the major arterial pedicles inside the long head of biceps femoris muscle. During the present study, it was found that the muscle received a single nerve supply in 97% of the dissected cadavers. This means that about in 58% of the cases, the muscle is available for transposition to wrap the anal canal. The available length of the muscle for rotation was about 57% of the length of the thigh.

CONCLUSION:

It can be concluded that, the long head of the biceps muscle can be safely rotated to wrap around the anal canal without serious effect on the main vascular pedicles and its nerve supply