Obturator Nerve Anatomy and Relevance To One Stage Facial Reanimation

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Background: Single stage facial reanimation with a partial gracilis muscle coapted to the contralateral facial nerve seems an optimal surgical solution yet hasn’t supplanted the two-stage approach 1-5. Insufficient obturator nerve length may limit reach to sizeable contralateral facial nerve branches possibly necessitating interposition nerve grafting, compromise optimal muscle positioning, or risk nerve coaptation under tension. The study evaluates whether retroperitoneal obturator nerve dissection would effectively lengthen the nerve thus obviating the aforementioned limitations.

Methods: Ten hemifaces and obturator nerves of five cadavers were dissected. Facial measurements included modiolus to contralateral facial nerve branches of sufficient size at the vertical line of the lateral orbital rim. Obturator nerve measurements included gracilis neurovascular hilum to: 1) obturator canal entry point (ab) 2) intra-obturator canal point where additional adductor branches are inseparable by internal neurolysis (ac) 3) retroperitoneal point of separation between anterior and posterior obturator branches (ad). Obturator nerve reach for cross facial nerve coaptation was assessed.

Results: Successful coaptation was achieved with obturator nerve dissection to point b in approximately 20%, to point c in 60-70%, and to retroperitoneal point d in 90-100% of the time

Conclusions: Successful coaptation to large contralateral facial nerve branches is feasible in 90-100% of cases if the entire anterior obturator branch is harvested. Yet, the increased risk of retroperitoneal dissection and sacrifice of additional adductor branches decreases the viability of this approach. Obturator canal dissection (point c) provides reach in 60-70% of cases but short interposition nerve grafting may prove necessary.

Reference Citations:

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