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Role of the fibromuscular bundles of orbital connective tissues in unpredicted outcome following strabismus surgery by using peribulbar sensorimotor differential block

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Introduction: Architecture of the extraocular muscles and pulleys revealed two distinct muscle layers seen on the transverse histopathological cross section. The peripheral layer is closest to the orbital wall and is called the orbital layer (OL). The inner layer is closest to the globe and is called the global layer (GL).

Objective: To compare ocular motility after sole extraocular muscle disinsertion and after both extraocular muscle with extensive orbital connective tissue disinsertion during surgery under peribulbar sensorimotor differential blocking anesthesia by 0.25% lidocaine or 0.2% Ropivacaine and to correlate that with surgical outcome.

Methods: 210 Eyes subject to various strabismus surgeries. The patients were divided at first into two groups. Group 1 was exposed to 0.2% Ropivacaine and Group-II was blocked by 0.25% lidocaine. Patients were further sub divided into two sub groups; Group A 105 eyes included muscles subject only to sole scleral disinsertion of extraocular muscle. Group B 105 eyes included muscles subject to scleral disinsertion in addition to complete extensive dissection and cutting of the surrounding orbital connective tissue and intermuscular membranes. We estimated ocular motility and active force generation test in both group.

Results: Patients receiving anesthesia using Ropivacaine had shown better blockage than those who received lidocain, as limitations of eye movement were more with lidocain than with ropivacain. Ocular motility in group A of 82 (78.09%) of all muscles was normal while for 21 (20%) muscles eye movement was reduced after disinsertion but only two rectus muscles 2 (1.91%) showing complete loss ocular motility. Ocular motility and force generation muscle strength in group B were markedly decreased 17 (16.19%) up to lost 88 (83.81%) and statistically significantly in comparable to group A. Postoperative residual and recurrent strabismus was higher and statistically significant in Group A.

Conclusion: Complete disinsertion of the fibromuscular orbital connective tissues surrounding the extraocular muscle during surgery is recommended and may prevent the unexpected under correction following strabismus surgery.

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