Anatomic and Histologic Investigation of Nasolabial Rejuvenation with Wire Subcision and Adjunctive Filler Injection

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INTRODUCTION: Nasolabial complex (NLC) rejuvenation with injectables is limited by densely adherent perioral and nasolabial crease tissues. Release of myodermal attachments may create a potential space for filler deposition, attenuating deep nasolabial creases associated with aging. Incisionless separation of these attachments has been described using subcision wires[1]. Adjunctive filler injection may promote a youthful nasolabial contour[2]. The anatomic basis for these techniques is not fully defined. This study histologically describes nasolabial wire subsicion with and without filler placement compared to filler injection alone.

METHODS: Of fourteen NLCs in seven fresh cadavers, eleven NLCs were subcised (SurgiWire Incisionless Dissector, Coapt Systems, Inc.), eight also underwent filler injection. One NLC was injected without subcision. Two were controls (no intervention). Injectable silicone (Dragon Skin, Smooth-On, Inc.) simulated dermal filler, and 2mL were injected per NLC. Full thickness portions of the lip and cheek containing the NLC were excised. Specimens were sectioned perpendicular to the nasolabial crease, stained with Masson's trichrome, then assessed in thirds (upper, middle, and lower).

RESULTS: Mean cadaver age was 72.7 years. Five (71%) were female. Mean length of the nasolabial crease was 41.2mm. Subcision/filler cavities were localized to a plane superficial to the facial mimetic musculature in 80.6% of sections. When compared to subcision alone, subcision combined with silicone filler generated larger, smooth-walled subcision cavities with division of myofascial elements. Filler injection without subcision resulted in irregular silicone deposition amongst multiple filler cavities. Vessels in excess of 300um diameter were disrupted in 3 specimens (25%) and 13 sections (14.1%). Vessel disruption was more frequent in the middle and lower thirds of the NLC, and 61.5% of vessel disruptions were observed during filler injection without subcision. Vessels exceeding 1000um diameter were identified in 5 specimens (35.7%) and 13 sections (8.4%). These larger vessels were always inferior or lateral to the subcision/filler plane, and in the middle/lower thirds of the NLC. No large vessel disruptions or intravascular filler were observed.

CONCLUSIONS: Wire subcision reproducibly divides muscular and connective tissue attachments to the nasolabial crease. Vessel disruption during subcision was uncommon, more frequently observed in the middle/lower thirds of the NLC. Vessels exceeding 1000um diameter were more frequently observed in the lateral aspect of the lower third of the NLC which is considered a vascular danger zone.

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