

# The Impact of Submental Deoxycholic Acid Injections on Neck Surgery

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**To the Editor:** Non-invasive procedures targeting the submental fat or “double chin” have undergone a surge in popularity. Injections of deoxycholic acid, a secondary bile acid, have recently received FDA-approval for fat reduction in this area. With appropriate patient selection, this preparation of 10 mg/mL of sodium deoxycholate (Kybella<sup>®</sup>, Kythera Biopharmaceuticals, Westlake Village, CA) leads to aesthetic improvement of moderate-to-severe convexity or fullness associated with submental fat in adults.

Treatment is generally safe and well tolerated. The most commonly reported transient adverse effects include injection site pain, swelling, bruising, erythema, hematoma, induration, numbness, nausea, and dizziness. There have been uncommon reports of marginal mandibular nerve paresis, dysphagia, and urticaria.

The proposed mechanism of action for the lipolysis properties of these bile acids is not fully elucidated. Current evidence suggests that sodium deoxycholate acts as a biological detergent that disrupts the adipocyte phospholipid bilayer, which leads to cellular lysis and necrosis. Laboratory investigations of cultured cells confirmed the deoxycholic acid-induced cellular lysis and also noted histological evidence of inflammation and neovascularization.

The trifecta of adipolysis, inflammation, and neovascularization may alter the texture of the subdermis, as the subcutaneous tissue may become firmer due to the formation of new adhesions and blood vessels. This unintended side effect of deoxycholic

acid injections is not commonly reported because, for most patients, it is unproblematic; however, this change in skin makeup of the submental region does have implications when performing open surgery on the anterior neck. In response to sodium deoxycholate, the submental fat may become contracted and excessively firm. The adhesions formed by the injections may also obscure the surgical planes, which complicates the dissection process. Neovascularization also increase the risk of bleeding in the surgical field, necessitating meticulous hemostasis and surgical drains.

We have found that these changes in subdermal characteristics secondary to deoxycholic acid injections pose a challenge when performing neck lifts, platysmoplasty, submentoplasty, neck liposuction, and neck dissection. Surgeons operating on the neck should, therefore, collect a comprehensive medical history and be familiar with deoxycholic acid injection adipolysis. This allows the surgeon to appropriately prepare for the operative challenges and counsel the patient on their individual risk profile as it pertains to the neck region.

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