

Original article

Post Rhinoplasty Fibrosis and Collagenase

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ABSTRACT

This study aims to explain the technique used to correct the soft tissue pollybeak deformity by utilizing intralesional injection of collagenase. We present our approach, procedure, and treatment regimen for addressing the soft tissue pollybeak using collagenase injection. We provide data from a group of 19 patient who underwent rhinoplasty. Collagenase was administered to 19 patients presented with soft tissue pollybeak deformity. Among these patients, 14 patient (74%) achieved satisfactory results with notable supratip definition, and 5 patients (26%) of the 19 patients experienced suboptimal outcomes, displaying residual supratip fullness according to the surgeon's assessment. Given the challenges and potential complications associated with revision surgery, the intralesional collagenase injection stands as the primary treatment for soft tissue pollybeak deformities caused by subdermal scarring. In cases where the deformity remains unaddressed after intralesional injection, revision rhinoplasty can be considered as a subsequent option

INTRODUCTION

The pollybeak deformity is a common complication of rhinoplasty, characterized by a convexity of the nasal supratip compared to the rest of the nose. It is often referred to as a pollybeak because the lower two-thirds of the nose resemble the curved profile of a parrot's beak. Unlike transient postoperative swelling, the pollybeak represents a persistent, unappealing fullness that distorts the dorsal profile and hides the tip of the nose [1-4].

The causes of pollybeak can be explained by a loss of tip support or excessive cartilage removal in the supratip area, leading to the formation of subcutaneous scar tissue, particularly in conjunction with thick nasal tip skin [3]. Also, can be due to inadequate removal of supratip structures, primarily the dorsal septal cartilage or the upper margins of the lower lateral cartilages [5], it is known as a cartilaginous pollybeak, which can be resolved by simply trimming the cartilage. The Collagenase, first identified in 1962, and has been used in various laboratory and therapeutic settings over the years. It is an enzyme that breaks down peptide bonds in types I, II, III, and IV collagen without disrupting the cell membrane [5]. This study aims to explain the technique used to correct the soft tissue pollybeak deformity by utilizing intralesional injection of collagenase.

METHODS

Study design and approval

This is a prospective pilot study to investigate the effects of intra-lesional injections of collagenase in volunteers' patients with local ethics committee approval and all patients gave their informed consent to participate in the investigations, the study was started in November 2021 and was complete after 6 months later.

Study sample

The study sample include 19 patients who underwent open rhinoplasty in different hospitals in private sector, and the result of surgery complicated by pollybeak deformity. The data collected during patients visit to the clinic and there was no chronic illness among them.

Treatment algorithm

We used bacterial collagenase, it is supplied as a lyophilized and sterile preparation which is 95% protein (by weight) with the balance made up by calcium chloride (CaCl₂) which is required for activation of the collagenase, it must be stored at 4 - 8C to retain its activity.

The collagenase vials were used after reconstituted with 3cc sterile normal and 1 ml tuberculin syringe with a 30 guage needle is utilized for the administration of collagenase and the quantity of collagenase used are 0.1 to 0.2 mL of reconstituted solution.

The technique for administering collagenase can be performed either as two separates lateral supratip injections or as a single midline supratip injection with redirection to the left and right sides. The injection should be administered in the subcutaneous tissue. If blanching is observed, indicating that the injection is in the dermis, the needle tip should be directed deeper. In cases of individuals with thick skin, a splint may be placed back on the nose after the first injection and left in position for approximately 1 week. The splint should fit well with appropriate pressure over the supratip area, but it should not extend onto the domal region or cover the tip. Patients should be informed that the supratip area may appear swollen for several days. The patients were evaluated every 4 weeks following the injection, and subsequent injections are administered based on the tissue response. generally, no more than 4 to 6 injections are administered over time.

RESULTS

Collagenase was administered to 19 patients presented with soft tissue pollybeak deformity. Among those patients, 14 patients (74%) achieved satisfactory results with notable supratip definition, and 5 patients (26%) of the 19 patients experienced suboptimal outcomes, displaying residual supratip fullness according to the surgeon's assessment patient's satisfaction.

Pain and edema were the most significant adverse effects for most of the patients and were subsided within two days, no permanent complications were observed in any of the patients in this series as a result of the injections (Figure 1).



Figure 1. Pre- and post-treatment photograph after 2 months from Collagenase administration

DISCUSSION

If collagenase injections do not fully correct the pollybeak deformity, revision surgery can be considered (delayed for at least 6 months after the initial surgery [6], where the scar tissue is excised and a compressive tape and nasal dorsal splint are applied. The compressive tape should be worn for at least 3 weeks. In cases where the cartilaginous septum or dorsal borders of the upper lateral cartilages are too high, they can be trimmed during surgical revision [6-8].

Prophylactic triamcinolone injections can be administered at the time of surgery and during the recovery period according to the outlined protocol.

While systemic steroids like dexamethasone are used by some rhinoplastic surgeons to reduce postoperative eyelid and nasal edema, it is unclear whether their use at the time of surgery can decrease the incidence of the pollybeak deformity [9]. Other modulators of the wound healing process, such as isotretinoin, interferon gamma, interferon alfa, and tamoxifen citrate, are being explored as potential intralesional or systemic treatments for keloids and hypertrophic scars. The effectiveness of these treatments alone or in combination with collagenase injection for post-rhinoplasty pollybeak correction is yet to be determined [10-12].

When administering the injection, it is important to target the subcutaneous layer of the supratip, where the overlying skin is thicker [13-14]. If the pollybeak deformity is not adequately resolved through intralesional collagenase injections, revision rhinoplasty can still be considered. However, it is generally recommended to wait at least six months following the initial surgery before proceeding with revision. This waiting period allows for proper healing and the resolution of any remaining swelling. Revision surgery for the pollybeak deformity is a more intricate procedure and carries a higher risk of complications. Therefore, careful consideration of the potential benefits and risks is necessary prior to deciding on surgical intervention [15-17].

CONCLUSION

Due to the complexities and potential complications associated with rhinoplasty surgery, subcutaneous intralesional collagenase injection can be considered the primary treatment approach for addressing the soft tissue pollybeak deformity. This technique is relatively simple and can yield favorable outcomes.

Conflict of interest

We declare no conflict of interest.

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تليف الأنف والكولاجيناز بعد عملية تجميل الأنف

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المستخلص

تهدف هذه الدراسة إلى شرح التقنية المستخدمة لتصحيح تشوه الأنسجة الرخوة في منقار الأنف باستخدام حقن الكولاجيناز داخل الآفة. نقدم نهجنا وإجراءاتنا ونظام العلاج لمعالجة تشوه الأنسجة الرخوة في منقار الأنف باستخدام حقن الكولاجيناز. نقدم بيانات من مجموعة من 19 مريضاً خضعوا لجراحة تجميل الأنف. تم إعطاء الكولاجيناز لـ 19 مريضاً يعانون من تشوه الأنسجة الرخوة في منقار الأنف. من بين هؤلاء المرضى، حقق 14 مريضاً (74%) نتائج مرضية مع تحديد ملحوظ لطرف الأنف، وشهد 5 مرضى (26%) من المرضى الـ 19 نتائج دون المستوى الأمثل، حيث أظهروا امتلاءً متبقياً في طرف الأنف وفقاً لتقييم الجراح. ونظراً للتحديات والمضاعفات المحتملة المرتبطة بجراحة المراجعة، فإن حقن الكولاجيناز داخل الآفة يمثل العلاج الأساسي لتشوهات الأنسجة الرخوة في منقار الأنف الناتجة عن ندبات تحت الجلد. في الحالات التي يظل فيها التشوه دون علاج بعد الحقن داخل الآفة، يمكن اعتبار عملية تجميل الأنف التصحيحية كخيار لاحق.

الكلمات المفتاحية: الكولاجيناز، الحقن داخل الآفة، تليف الأنف بعد عملية تجميل الأنف، بوليبيك.