OPEN

IDEAS AND INNOVATIONS

Cosmetic

Effective Use of a Silicone-induced Capsular Flap in Secondary Asian Rhinoplasty

Jae Yong Jeong, MD*†‡
Sang-Ha Oh, MD†‡§
Man Koon Suh, MD¶
Chang Kyung Kim, MS‖
Kenneth K. Kim, MD‖**

Summary: Performing secondary rhinoplasty in patients who underwent primary rhinoplasty using a silicone implant is difficult due to thinning of nasal skin and formation of a capsule. Excess capsule formation can cause capsular contracture, resulting in short nose deformity or implant deviation, migration, or implant demarcation. Revision rhinoplasty using a capsular flap, dorsal silicone implant, and tip plasty was performed in 95 Korean patients (91 women and 4 men; mean age, 27 years) who previously underwent primary augmentation rhinoplasty using silicone implants. The capsular flap was composed by creating a dual plane above the anterior capsule and below the posterior capsule. The existing silicone implant was removed, and a new silicone implant was placed under the posterior capsule. The patients were followed up for 6 months to 4 years (mean, 31.7 months). Of the 95 patients who underwent secondary augmentation rhinoplasty using a capsular flap, 88 patients (92.6%) showed satisfactory results. There was no hematoma or nasal skin vascular compromise. There was no visible or palpable capsule resorption or recurrent capsular contracture. Early implant malpositioning (within 30 days postoperatively) was observed in 4 patients, and tip shape dissatisfaction (within 60 days postoperatively) was reported by 3 patients. Four patients underwent revision surgery and had successful outcomes. Nasal augmentation using a silicone implant and capsular flap in secondary rhinoplasty avoids complications caused by removal of the capsule. Recurrent capsule formation or clinically noticeable resorption of the capsular flap was not observed in this study. *(Plast Reconstr Surg Glob Open 2014;2:e172; doi: 10.1097/GOX.0000000000000126; Published online 17 June 2014.)*

Because Asians often lack dorsal height and tip projection,[1] augmentation rhinoplasty using a silicone implant is one of the most commonly performed aesthetic procedures in Asia. Although silicone implants are biocompatible and chemically stable,[2] they can induce significant capsular contracture.

Patients choose to undergo revision surgery because of unsatisfactory aesthetic results or complications of the initial operation. There is no consensus on whether to remove the capsule or preserve it in secondary rhinoplasty. Complete removal of the

*From the *PLUS Plastic Surgery Clinic, Daejeon, Korea; †Research Institute for Medical Sciences, College of Medicine, Chungnam National University, Daejeon, Korea; ‡Clinical Anatomy Institute, Chungnam National University Hospital, Daejeon, Korea; §Department of Plastic and Reconstructive Surgery, Chungnam National University, Daejeon, Korea; ¶JW Plastic Surgery Clinic, Seoul, Korea; ‖Dream Medical Group, Los Angeles, Calif.; and **Division of Plastic and Reconstructive Surgery, David Geffen School of Medicine at University of California, Los Angeles, Calif.*

Received for publication November 19, 2013; accepted April 30, 2014.

Presented at Seoul Rhinoplasty Symposium 2012, in South Korea, June 17, 2012. Published as a chapter in Recent Advances in the Asian Rhinoplasty Surgery Guide, June 24, 2011.

DOI: 10.1097/GOX.0000000000000126

capsule can lead to irregularities in thickness of the nasal skin soft tissue envelope (SSTE) and vascular compromise of the skin. In addition, aggressive removal of the capsule may result in thinning of the dorsal SSTE.[3–5] As a result, the appropriate management of the capsule during secondary rhinoplasty is a topic of high interest among plastic surgeons in Asia. We introduce our surgical technique of dual-plane capsule release and utilization of the capsular flap in secondary rhinoplasty.

MATERIALS AND METHODS

Between March 2008 and May 2011, 95 patients [4 men, 91 women; 21–53 years of age (mean age, 33 years)] who presented with unsatisfactory results from primary rhinoplasty using a silicone implant were included in this study. These patients presented on average 5 years after their initial surgeries, which were performed at outside clinics. The follow-up period for this study was 6 months to 4.6 years (mean, 31.7 months). Two surgeons examined the result with direct observation, photograph analysis, and palpation. They all demonstrated silicone implant-associated deformities, such as deviation, dorsal edge demarcation, impending extrusion, or short nose deformity.[6]

We excluded patients with infected or calcified capsules from this study (Table 1). Capsules were considered infected if nasal skin erythema or pus surrounded the capsule.

Surgical Technique

Open rhinoplasty using transcolumellar incision was performed. The nasal SSTE was elevated and the alar cartilages were then exposed. Any scar tissue was released and freed from the soft-tissue envelope.

Superficial Plane Dissection

Superficial plane dissection was performed with scissors to separate the skin envelope from the capsule without damaging the capsule and the surrounding SSTE (Figs. 1B and 2A). Dissection proceeded cephalad and laterally until the SSTE expanded sufficiently to the point that the nasal SSTE was able to drape the nose without any tension. It is important to note that at the keystone area, the SSTE is especially thin. Therefore, capsule dissection must be performed very carefully to avoid skin damage and capsule rent. The anterior surface of the capsule was examined to determine whether there was any calcification.

Disclosure: *The authors have no financial interest to declare in relation to the content of this article. This work was supported by Basic Science Research Program through the National Research Foundation of Korea funded by the Ministry of Science, ICT and Future Planning (2013R1A1A1057928). The Article Processing Charge was paid for by the authors.*

Table 1. Preoperative Characteristics

Preoperative Characteristics	% (Cases)
Short nose deformity	33.7 (32)
Deviation	37.9 (36)
Implant demarcation show	20.0 (19)
Hypertrophic scar formation	8.4 (8)

Deep Plane Dissection: Posterior Capsule Separation

After the superficial plane dissection was performed, a deep plane dissection was performed to separate the silicone-induced posterior capsule from the upper lateral cartilages and bone (Figs. 1C and 2B). The deep plane dissection cephalad to the keystone area was under the periosteum. Next, the existing silicone implant was removed through the caudal end of the capsule (Fig. 1D). The posterior capsule was examined visually and by palpation to determine whether there were any calcifications or granulated tissue suggestive of inflammation.

Correction of Short Nose Deformity and Tip Plasty

In patients with concurrent short nose deformity, the alar cartilages were separated from the inferior rim of the upper lateral cartilages. In addition, scar tissues at the scroll area, membranous septum, and nasal hinge complex were released to gain mobility of the alar cartilages. Next, various tip supporting and tip-plasty procedures (columellar strut or septal extension grafting) were performed using autologous cartilages (ear, septum, or rib).

Manipulation of the Capsular Flap

Any significant irregularities of the distal component of the capsule were trimmed to create symmetry of the capsule thickness (Fig. 1).

The newly created pocket was irrigated with antibiotic solution. The new dorsal silicone implant was inserted at the new pocket under the posterior layer of the capsular flap (Fig. 1E). The caudal end of the capsule was sutured to the dorsal side of the new implant to hold the flap taut to keep it from bunching.

RESULTS

Follow-up results showed satisfactory and stable results in 88 patients (92.6%). There were no visible and no palpable surface irregularities or dorsal

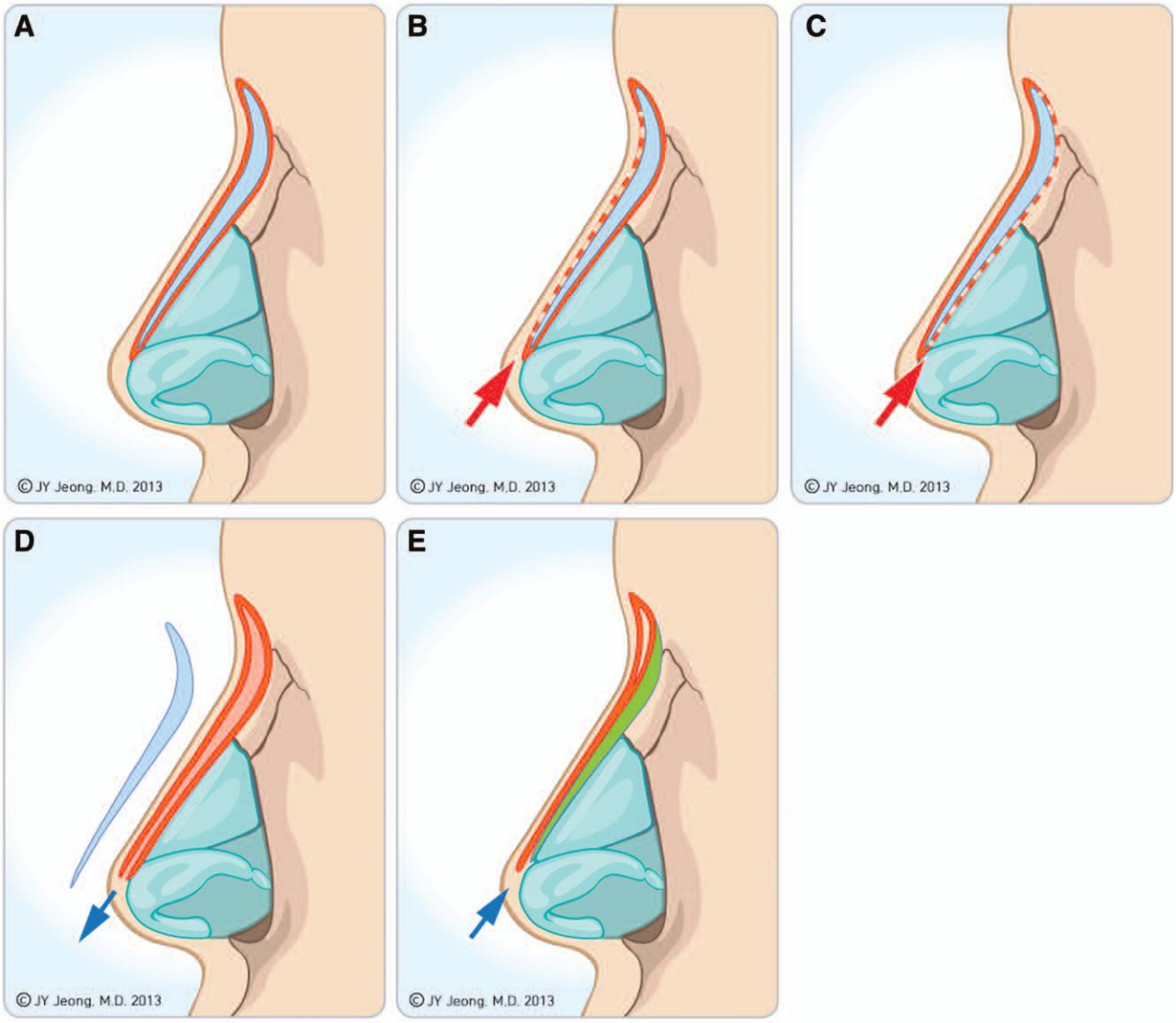

Fig. 1. Illustration of operation method (serial). A, Before dissection. B, Superficial plane dissection above the capsule. C, Posterior dissection below the capsule. D, Removal of existing implant. E, Placement of new implant below the posterior capsule.

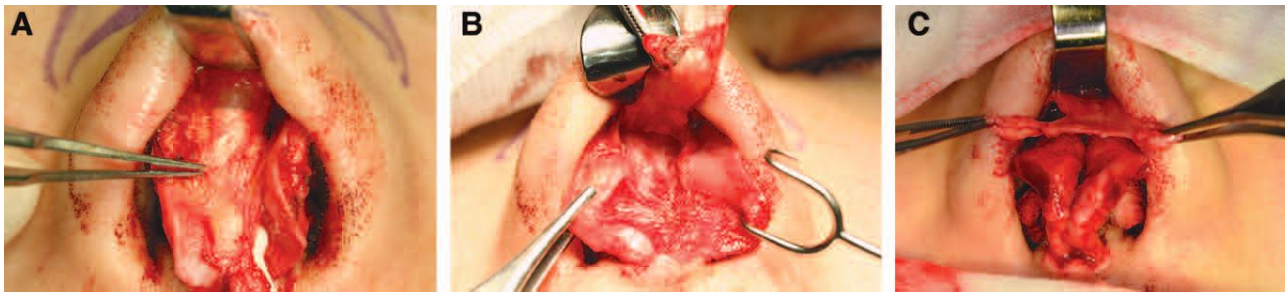

Fig. 2. A, Superficial plane dissection above implant and overlying capsule. B, Deep plane dissection under implant and underlying capsule. C, Superiorly based capsular flap.

thickness changes suggestive of capsular reabsorption or recurrent capsular contracture. There were no cases of postoperative infection, hematoma, or vascular compromise of the nasal skin. In 4 patients, implant malpositioning was observed within 30 days postoperatively. Tip shape dissatisfaction was reported by 3 patients within 60 days postoperatively (Table 2). Four patients underwent minor revision

Table 2. Postoperative Complications of Secondary Asian Rhinoplasty Using Capsular Flap (*n* = 95)

Complications	% (Cases)
Implant malposition	4.2 (4)
Tip shape dissatisfaction	3.2 (3)
Partial/complete capsular flap resorption	0 (0)
Capsular contracture	0 (0)
Infection	0 (0)
Hematoma	0 (0)
Nasal skin vascular compromise	0 (0)
Total	7.4 (7)

surgery and had successful outcomes. The other 3 patients denied revision surgery.

DISCUSSION

Performing secondary rhinoplasty in patients who underwent primary rhinoplasty using a silicone implant is difficult due to thinning of nasal skin and formation of a capsule.

Much literature has been written on silicone-induced capsules as they relate to breast augmentation

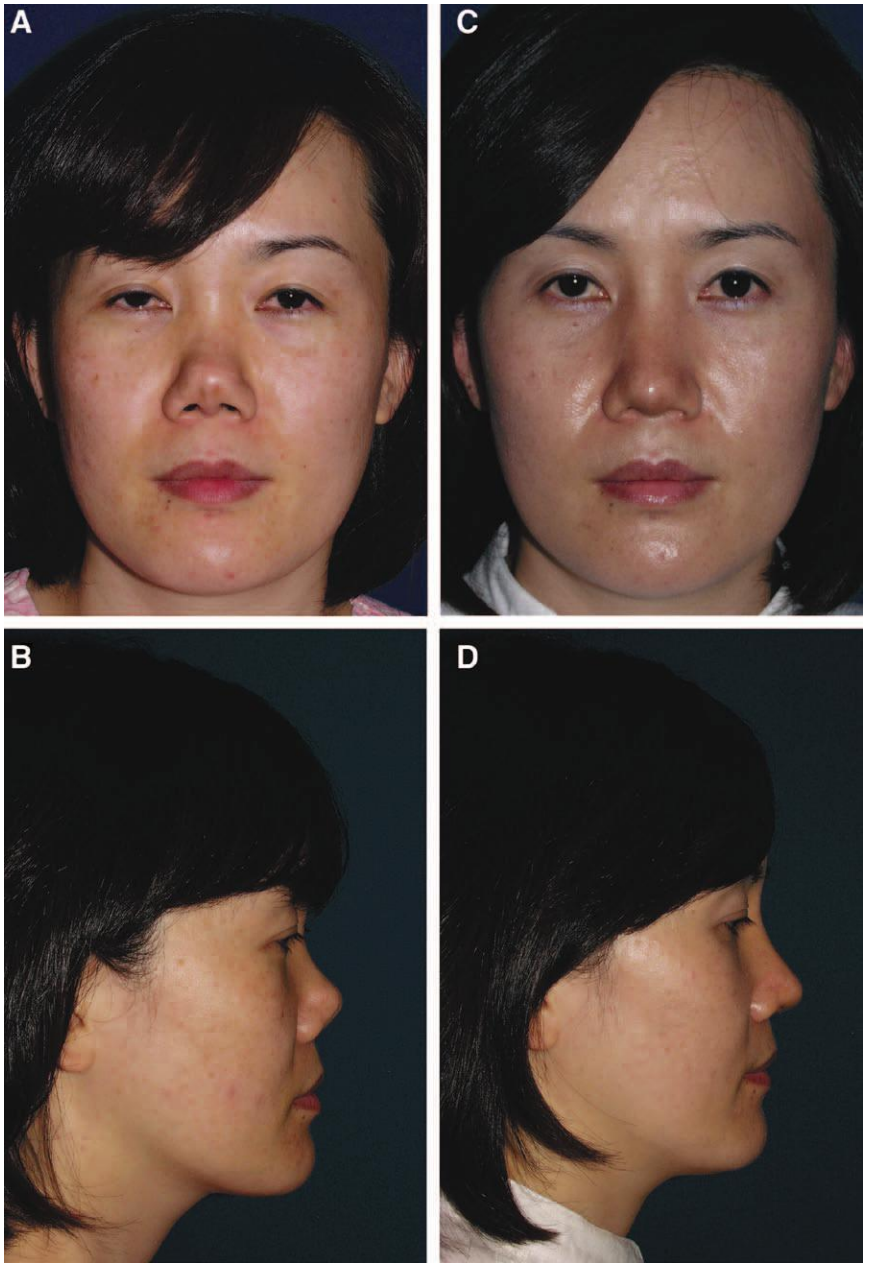

Fig. 3. Frontal (A) and lateral (B) photographs of a 42-year-old female patient who underwent the secondary augmentation rhinoplasty using silicone-induced capsular flap. C, Preoperative appearance showing short and upturned nose deformities exhibited due to scar contracture. D, Four-year postoperative appearance.

or various forms of tissue expansion.[7-9] In silicone-implant breast augmentation, often the abundant breast soft tissue may allow complete capsule removal without significantly affecting breast shape. In patients with preexisting thin nasal skin, the removal of the capsule can lead to nasal dorsal skin irregularities and significant graft demarcation show. In addition, the use of the autologous grafts, such as temporalis fascia, dermal fat grafts, and allografts, can often lead to dorsal irregularities and unpredictable long-term results of graft resorption.[10–13]

If capsular contracture is not present (ie, only a thin capsule is present) during revision surgery, then an implant can be placed in the original pocket area. However, if significant capsular contracture is present, then contact between the capsule and the new silicone implant can potentially induce recurrence of capsular contracture. Our technique creates a new pocket underneath the posterior capsule. Placement of a silicone implant in this posterior plane avoids silicone implant contacting the inner surface of the capsule. In cases of infected or calcified capsules, complete autologous materials such as dermal fat grafts or cartilage grafts are required rather than silicone implants.

CONCLUSIONS

In secondary rhinoplasty after a silicone implant was used in the primary setting, the use of the capsular flap to preserve the dorsal SSTE volume was safe and reliable. There were no cases of recurrent capsular contracture, capsular resorption, or postoperative infection (Fig. 3). This technique avoids the dorsal irregularity and nasal SSTE vascular compromise that can occur with complete capsule removal.

PATIENT CONSENT

The patient provided written consent for the use of her image.

Jae Yong Jeong, MD
PLUS Plastic Surgery Clinic
6F Doonsan Mirae B/D 1040
Doonsan-2 dong
Seo-gu
Daejeon 302–829
Korea. E-mail: dogearjeong@naver.com

REFERENCES

1. McCurdy JA Jr. Considerations in Asian cosmetic surgery. *Facial Plast Surg Clin North Am.* 2007;15:387–397, vii.
2. Jung DH, Kim BR, Choi JY, et al. Gross and pathologic analysis of long-term silicone implants inserted into the human body for augmentation rhinoplasty: 221 revision cases. *Plast Reconstr Surg.* 2007;120:1997–2003.
3. Jung DH, Moon HJ, Choi SH, et al. Secondary rhinoplasty of the Asian nose: correction of the contracted nose. *Aesthetic Plast Surg.* 2004;28:1–7.
4. Pak MW, Chan ES, van Hasselt CA. Late complications of nasal augmentation using silicone implants. *J Laryngol Otol.* 1998;112:1074–1077.
5 Ohtake N, Shioya N. Current advances in rhinoplasty. In: Song IC, ed. *Facial Cosmetic Surgery in Orientals.* Philadelphia, PA: JB Lippincott; 1991:563–571.
6. Byun JS, Kim KK. Correction of Asian short nose with lower lateral cartilage repositioning and ear cartilage grafting. *Plast Reconstr Surg Glob Open* 2013;1:e45.
7. Baran CN, Peker F, Ortak T, et al. A different strategy in the surgical treatment of capsular contracture: leave capsule intact. *Aesthetic Plast Surg.* 2001;25:427–431.
8. Rockwell WB, Casey HD, Cheng CA. Breast capsule persistence after breast implant removal. *Plast Reconstr Surg.* 1998;101:1085–1088.
9. Moufarrege R, Beauregard G, Bosse JP, et al. Outcome of mammary capsulotomies. *Ann Plast Surg.* 1987;19:62–64.
10. Park JH, Jin HR. Use of autologous costal cartilage in Asian rhinoplasty. *Plast Reconstr Surg.* 2012;130:1338–1348.
11. Cervelli V, Bottini DJ, Gentile P, et al. Reconstruction of the nasal dorsum with autologous rib cartilage. *Ann Plast Surg.* 2006;56:256–262.
12. Suh MK. *Asian Rhinoplasty.* 1st ed. Seoul, Republic of Korea: KAPS; 2012.
13. Kim HS. Dorsal augmentation in secondary rhinoplasty. *J Korean Soc Aesthetic Plast Surg.* 2008;14:79–98.