INTRODUCTION

The chin is an extremely relevant anatomic component of facial harmony.1,2 Chin augmentation with the use of implants is a highly effective surgical procedure, with a low rate of complications.1,3 The range of postsurgical patient satisfaction after genioplasty is between 85% and 90%.4 Currently, silicone is the most commonly used material for implants,1 because it causes less adhesion of soft tissue, which makes it easier for the implant to be inserted or removed as necessary.4,5 As with most surgeries, the use of implants may produce complications. There have been reports of a series of possible complications related to the use of implants such as infections, oral incompetence, displacement of the implant, damage of the mental nerve, bone resorption, and so on.1,5 Bone resorption is the most disturbing complication that could occur. This complication occurs because the chin is a very dynamic region, and it is exposed continually to the movements of the lips and mouth.1,5

METHODOLOGY

The study was forehanded accepted by the ethics committee of Hospital Clínico Universidad de Chile. All the patients verbally agree to participate in the study. Fifteen patients were evaluated in a retrospective study, using lateral chin radiographs with a soft parts technique. None of the patients presented any symptoms. Patients were between the ages of 14 and 57 years, with an average age of 34 years, none of whom had concomitant disease at the time of the surgery. The same surgical technique was used, with an intraoral approach, dissecting levels from canine to canine, with divulsion of the median raphe, ending with a subperiosteal dissection of the bone ridge, without sectioning any muscle. A pocket of the same size of the implant is made. We insert the silicone implant “Silimed preformado”, number 3 dimensions: 48 × 17 × 8 mm. We only suture the oral mucous membrane, using Proline 5.0. The bone resorption was quantified measuring the depth of erosion thru the x-rays.

RESULTS

A lateral radiograph of the chin was taken for all the patients. Fourteen patients presented with minimum bone erosion, all of them at the superior ridge of the prosthesis.
Clinically, all patients were asymptomatic. One patient had absolutely no degree of erosion (Fig. 1). Just 3 of the 15 patients presented with bone erosion measured greater than 1.5 mm, with maximum resorption measured to 2.0 mm (Fig. 2). The patient with the longest follow-up (17 years), presented with a bone erosion of 0.8 mm; meanwhile, the patient with the shortest, had a bone erosion with 1 mm (Table 1).

There is no relation between age nor the years of follow-up, with the degree of erosion.

**DISCUSSION**

Bone erosion is a complication that can occur frequently in chin implant procedures. However, this is not the case for silicone implants of the cheeks or nose, and this could be due to the fact that these latter 2 areas lack the muscle groups and the dynamic forces that are present in the chin.

One important factor that favors bone erosion is the location of the implant itself in the subperiosteal region, which could potentially increase the risk of damage. However, when we place the implant in the subperiosteal region, no significant bone erosion was observed. We believe this happens because of the characteristics of the implant’s material, which is softer than the most common silicones used in these kinds of procedures. Therefore, we propose that by using this softer silicone implant, the risk of bone erosion linked with the placement of the implant in the subperiosteal region may be decreased. Also, by using this deeper region to insert the prosthesis, there is a lower chance of displacement of the implant.

Chin radiographs are useful for screening bone erosion in asymptomatic patients. The study of patients with positive images for bone erosion in the radiography can be complemented with a DentaScan. This dental computed tomography scan would allow us to determine and quantify in a more precise way the magnitude of the erosion, and in the end, to establish the more suitable medical and surgical conduct to be practiced on this group of patients.
CONCLUSIONS

Augmentation genioplasty with the use of silicone implants is an excellent surgical option to achieve both esthetic and functional results that are adequate for patients. During this study, bone erosion was found in 14 of the 15 patients; nevertheless, 80% of them presented less than 2 mm of erosion. We sustain that these results are the outcome of the implemented surgical technique in conjunction with the adequate implant material used: that is, an intraoral approach with insertion of a soft silicone implant under the periosteum. We also propose that every patient has a different response to the implant, and to investigate which factor could affect the erosion is beyond the goal of this study.

We suggest performing a periodical follow-up on patients in the future to see if any other complication is found.

Macarena F. Ahumada
Luis Matte Larrain 9774
Las Condes, Santiago, Chile
E-mail: Macarena.aben@gmail.com

REFERENCES

1. Betancourt D, Vélez E. Mentoplastia de aumento con implante de silicona en la clínica la Font en el periodo 1998 a 2009.1–59.
2. Tang X, Gui L, Zhang Z. Analysis of chin augmentation with autologous bone grafts harvested from the mandibular angle. *Aesthet Surg J*. 2009;29:2–5.
3. Ramírez F, Bañuelos A. Mentoplastía de aumento con implante alopástico. *AN ORL MEX*. 2006;51:64–70.
4. Lee EI. Aesthetic alteration of the chin. *Semin Plast Surg.* 2013;27:155–160.
5. Fausto viterbo. Chin augmentation with conchal cartilage. *Plast Reconstr Surg.* 2003;111:899.
6. Safian J. Progress in nasal and chin augmentation. *Plast Reconstr Surg.* 1966;37:446–452.
7. Abrahams JJ, Caceres C. Mandibular erosion from silastic implants: evaluation with a dental CT software program. *AJNR Am J Neuroradiol.* 1998;19:519–522.
8. Peled IJ, Wexler MR, Ticher S, et al. Mandibular resorption from silicone chin implants in children. *J Oral Maxillofac Surg.* 1986;44:346–348.
9. Jobe R, Iverson R, Vistnes L. Bone deformation beneath alloplastic implants. *Plast Reconstr Surg.* 1973;51:169–175.