



## Case report

# Flipped autograft: A novel approach for management of wound dehiscence in implant dentistry. A case report

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## ABSTRACT

**Introduction and importance:** This case report describes a novel technique for management of peri-implant wound dehiscence that involves using auto graft from the same surgical site to seal the dehiscence defect.

**Case presentation:** A 21-year-old female was referred for extraction of a non-restorable lower left first molar and replacement by immediate dental implant. Following attachment of the cover screw bone graft biomaterial and collagen membrane was secured over the biomaterial and buccal flap was coronally positioned and sutured. Patient was seen 1 week after surgery for follow up where a minor wound dehiscence was discovered with some biomaterial particles exposed. Patient was advised to continue strict oral hygiene control and to wait for another week. After 2 weeks of the implant placement surgery patient came back for dehiscence management visit where an innovative flipped autograft technique was performed to seal the dehiscence defect.

**Clinical discussion:** Healing by primary intention was achieved that led to uneventful healing and hence a successful well-functioning restoration with clinically healthy soft tissue and optimal aesthetic outcome.

**Conclusions:** Peri-implant wound dehiscence can be successfully treated by the novel flipped autograft technique that yielded great aesthetic and functional results.

## 1. Introduction

The increased demand for implants in resorbed or narrow ridges has led to the development of several surgical techniques for augmentation of narrow ridge. These techniques can potentially give rise to post-surgical complications such as soft tissue wound dehiscence, membrane exposure, partial or total loss of graft material, and neurosensory alterations [1,2].

Wound dehiscence refers to sites where the surgical incision reopens, resulting in a slight gaping wound or where the barrier membrane was exposed. Wound dehiscence can be classified according to the size of the exposure and the presence of exudate, namely small exposures equal or less than 3 mm without purulent exudate, larger exposures without purulent exudate, and membrane exposure with purulent exudate [3].

Minor wound dehiscence is the most common post-surgical complication that occurs after Guided bone regeneration (GBR) at an incidence proportion of 9.9 % at a site-level [4]. It can lead to early or late membrane exposure, contamination, infection, and partial or total loss of the graft, which would largely affect the quality and amount of bone gain [5]. When such complications occur, timely intervention and

follow-ups are required.

This case report presents and discusses the use of a novel technique for management of peri-implant wound dehiscence that involves using autogenous gingival graft from the same surgical site to seal the dehiscence defect and achieve primary intention healing eliminating the need for another donor site and reflecting a new surgical flap to manage the defect.

## 2. Case presentation

The presented case report is recorded according to the SCARE checklist recommendations [6]. a female patient was treated at a private practice in Al-sharqia governorate, Egypt, between January 2020 and October 2020 and the follow up period extended to May 2021.

Patient was a 21-years-old healthy, non-smoker, with no significant drug history. She had a non-restorable lower left first molar that needed extraction and replacement by immediate dental implant (Fig. 1).

At consultation, patient received oral hygiene instruction with emphasis on gumline brushing with an extra soft toothbrush and interdental cleaning with interdental brushes and dental floss.

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Fig. 1. Preoperative occlusal view shows massive non-restorative lower left first molar.

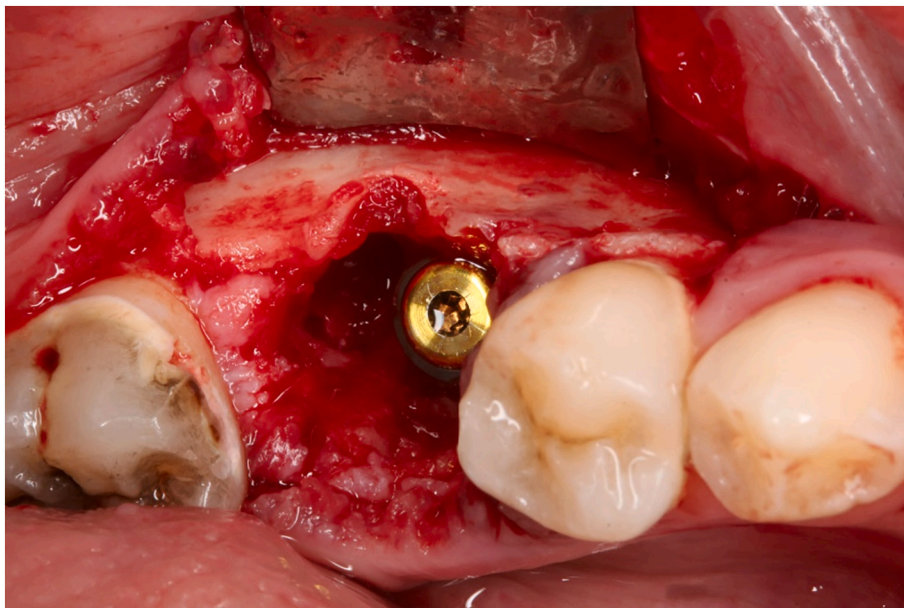


Fig. 2. Dental implant immediate placement; large junction gap with bone defect at the buccal crest.

Oral hygiene was reassessed and instructed as necessary at subsequent visits.

Before surgery, patient had scaling and root debridement done. The BUE faculty of dentistry Research Ethics Committee had reviewed and accepted the proposal in December 2019 in line with the Helsinki Declaration of 1975.

### 3. Case management

Written informed consent was obtained from the patient. Nerve block and infiltration anaesthesia of Articaine HCL 4 %<sup>1</sup> containing epinephrine at a concentration of 1:100,000 were administered. The surgical procedure was done by a periodontist and teaching staff member in periodontology and implantology department, faculty of dentistry, the British university in Egypt.

Tooth was extracted as atraumatically as possible after flap elevation

and dental implant<sup>2</sup> with suitable diameter and height according to the site was placed immediately ensuring adequate primary stability (Fig. 2). Following attachment of the cover screw bone graft biomaterial<sup>3</sup> were packed into the socket to fill the junction gap and restore the buccal bone crest (Fig. 3). collagen membrane<sup>4</sup> was secured over the biomaterial with bone tacks (Fig. 4). Buccal flap was coronally positioned and sutured to the lingual flap with cross mattress and simple interrupted sutures using 5-0 polypropylene. Patient received antibiotics for 1 week (amoxicillin + clavulanic acid · 1000 mg b.d.s)<sup>5</sup> and an anti-inflammatory (ibuprofen b.d.s).<sup>6</sup> Patient was instructed to pass the first 24 h and start rinsing twice daily with a 0.12 % chlorhexidine

<sup>2</sup> Vitronix – Italy.

<sup>3</sup> Botiss inco- Germany.

<sup>4</sup> Botiss inco- Germany.

<sup>5</sup> Amoxil MUP Egypt.

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<sup>1</sup> Septodont LTD, Septanest 1:100,000.

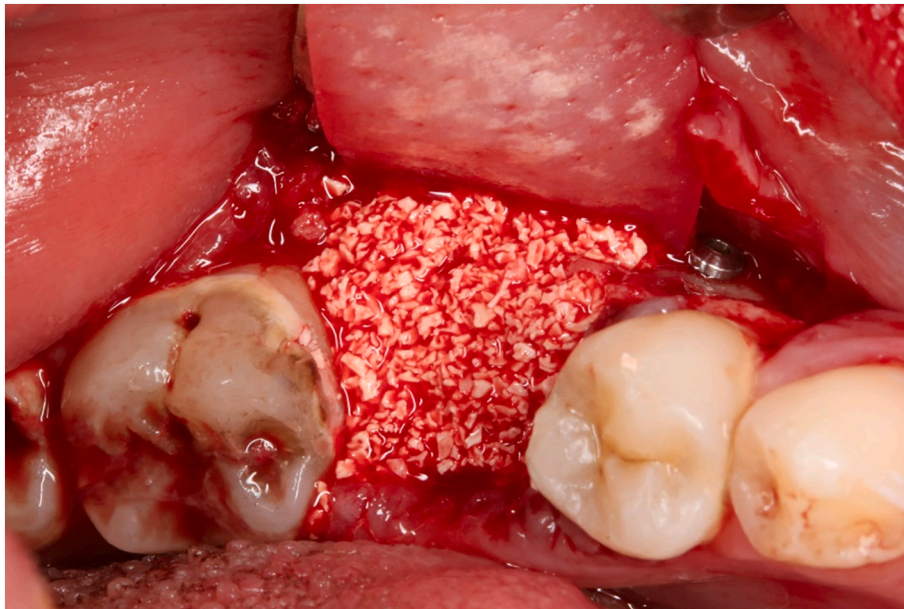


Fig. 3. Biomaterial was packed into the junction gap to fill all the socket and cover the implant to ensure regeneration of the whole ridge.

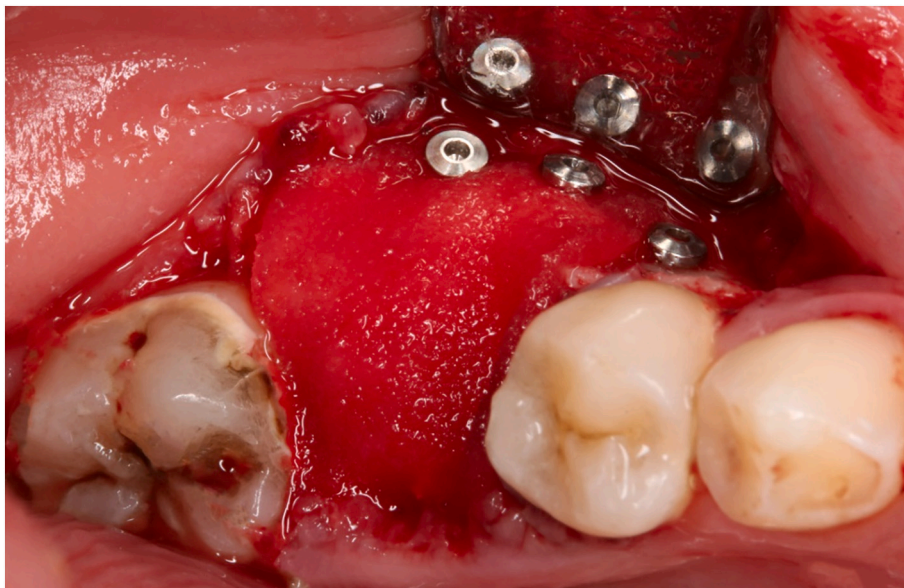


Fig. 4. Filled socket was covered by collagen membrane and secured by tacks.

digluconate<sup>7</sup> mouth rinse and to avoid mechanical plaque control at the site of surgery for 15 days. Patient was seen 1 week after surgery for follow up. At that time, a minor wound dehiscence was discovered with some biomaterial particles exposed (Fig. 5). Patient was advised to continue strict oral hygiene control and to wait for another week. After 2 weeks of the implant placement surgery patient came back for dehiscence management visit. Thick lingual flap was de-epithelized and partially dissected to increase its length then flipped and sutured to the buccal flap to obtain primary closure (Fig. 6). The surgery was performed with assistance of a surgical dental loupes at a magnification of 4×. patient was instructed again to follow the postoperative care regime for another 2 weeks.

#### 4. Clinical outcomes

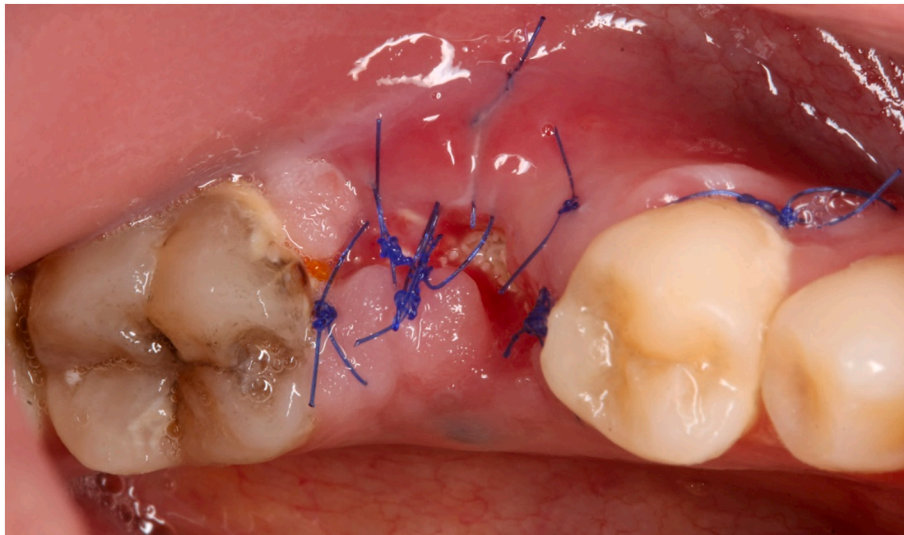
Postoperative healing was uneventful (Fig. 7). Four months after dehiscence management surgery, the site was re-opened (Fig. 8) to attach a custom healing abutment which was secured in place for 1 month to create an ideal emergence profile (Figs. 9, 10). After that patient received her permanent crown (Fig. 11) the patient was happy about the outcome she got and were on follow up period up to 7 months (Fig. 13). clinical examination showed well-functioning restoration with clinically healthy surrounding soft tissue, periapical controls revealed crestal bone stability and adequate bone fill (Figs. 12, 14).

#### 5. Discussion

Soft tissue dehiscence is a major post-surgical complication that can lead to exposure of the barrier membrane, impaired wound healing,

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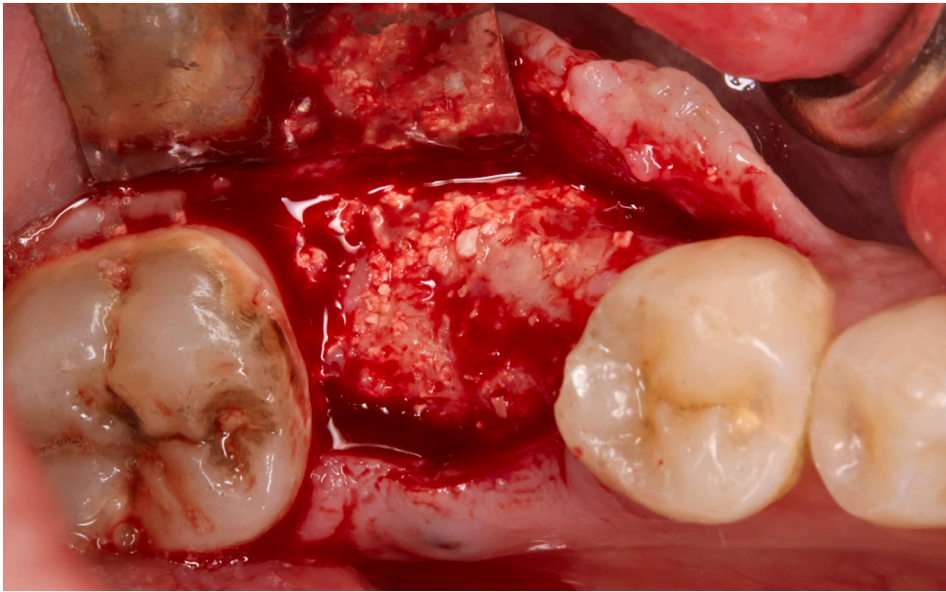
**Fig. 5.** 1 week after a minor dehiscence appeared with exposure of the bone graft.



**Fig. 6.** Dehiscence was managed by using flipped autograft technique; Thick lingual flap was de-epithelized and partially dissected to increase its length then flipped and sutured to the buccal flap to obtain primary closure.



**Fig. 7.** Follow up after four months, healing was eventful with no obvious abnormality.



**Fig. 8.** Re-opening the site for prosthetic stage, image shows complete bone fill.



**Fig. 9.** Custom made abutment was made and attached to the implant to create an ideal emergence profile.

graft resorption, and reduction in the quality and amount of bone regeneration [5]. It is critical that the augmented surgical site remains free of contamination and that the membrane maintains its barrier function to allow the underlying bone graft to be populated by osteogenic cells [4].

Many published studies have reported common management regimes for wound dehiscence, that consisted of either the use of antiseptics [7,8] systemic antibiotics [8], or site repair with autogenous free gingival graft [9,10], or growth factors as PRGF membrane [11].

In this case report, peri-implant wound dehiscence was managed by a novel flipped autograft technique where an autogenous graft from the same surgical site was de-epithelized to obtain larger amount of collagen-rich connective tissue from lamina propria, minimal amount of fatty/glandular tissue and less number of medium to large vessels

[12,13], and partially dissected to increase its length then flipped to seal the dehiscence defect. This novel approach is relatively simple, less invasive and time saving as it eliminates the need for another surgical donor site to manage the defect. In addition, it aims at achieving healing by primary wound closure and promoting angiogenesis, which would ultimately lead to improved bone regeneration. Moreover, the enhanced colour match resulting from using the flipped autograft from the same surgical site has led to ideal aesthetic results and optimal patient satisfaction. Studies with long-term follow-up would be of help in evaluating the benefits and limitations of using the flipped autograft technique in management of peri-implant wound dehiscence.





**Fig. 10.** Emergence profile was created after 1 month of provisional abutment placement, site is now ready for final restoration.



**Fig. 11.** Postoperative occlusal view showing final crown in place.

## 6. Conclusion

Peri-implant wound dehiscence can be successfully treated by the novel flipped autograft technique that yielded good aesthetic and functional results.

## 7. Summary

- This case report appears to be the first to demonstrate the management of wound dehiscence using flipped autograft technique
- Visibility and access, Primary closure with delicate manipulation and Diligent patient home care are the keys to successful management of this case.
- The primary limitations to success in this case are poor blood supply associated with thin thickness soft tissue flap, Failure to achieve primary closure and Poor patient home care.

## Provenance and peer review

Not commissioned, externally peer-reviewed.

## Funding

No external funding was available for this study.

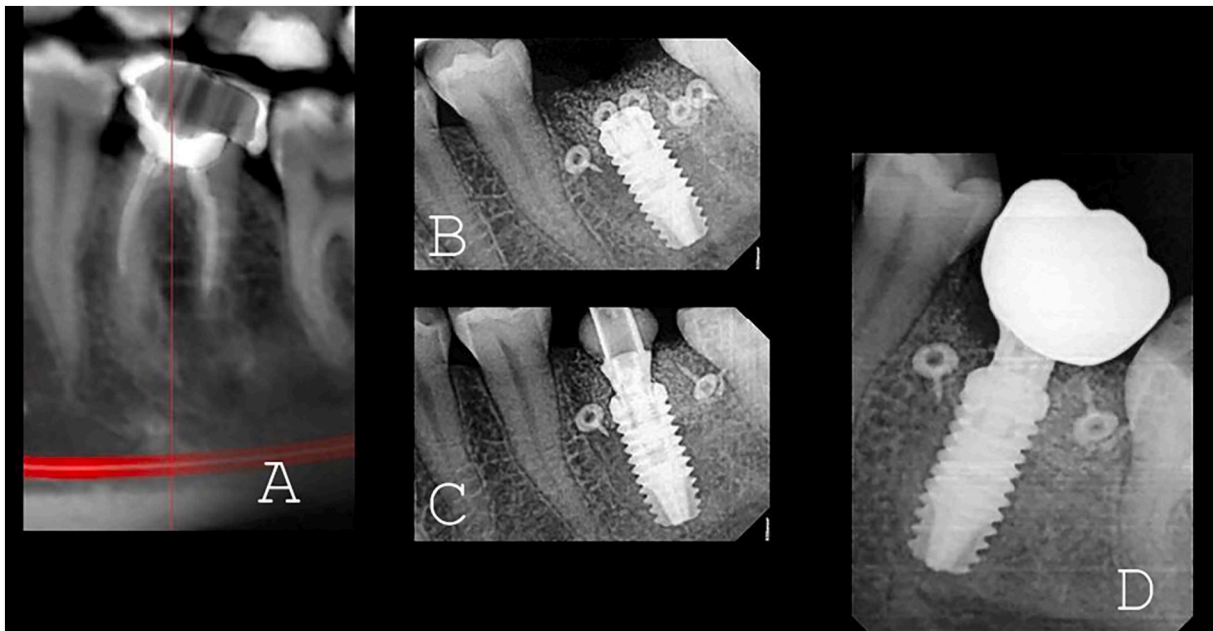
## Ethical approval

The BUE faculty of dentistry Research Ethics Committee had reviewed and accepted the proposal in December 2019 in line with the Helsinki Declaration of 1975.

Reference number: 22-012.

## Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the



**Fig. 12.** A) Preoperative PA shows non restorable lower left first molar, B) PA showing the site immediately after dental implant placement, C) 4 months later, PA after attachment of the custom healing abutment, D) PA showing final crown in place.



**Fig. 13.** Clinical view shows final restoration at 7 months follow up.

written consent is available for review by the Editor-in-Chief of this journal on request.

**Author contribution**

Ahmed hamdy: Conceptualization; Methodology; Project administration Writing - original draft.

Dalia Ghalwash: Writing - review & editing.

**Registration of research studies**

1. Name of the registry: [clinicaltrials.gov](https://clinicaltrials.gov)
2. Unique identifying number or registration ID: NCT05513222

3. Hyperlink to your specific registration (must be publicly accessible and will be checked): [ClinicalTrials.gov](https://clinicaltrials.gov) PRS: Record Summary NCT05513222

**Guarantor**

Ahmed hamdy mahmoud.

**Declaration of competing interest**

The authors report no conflicts of interest related to this study.

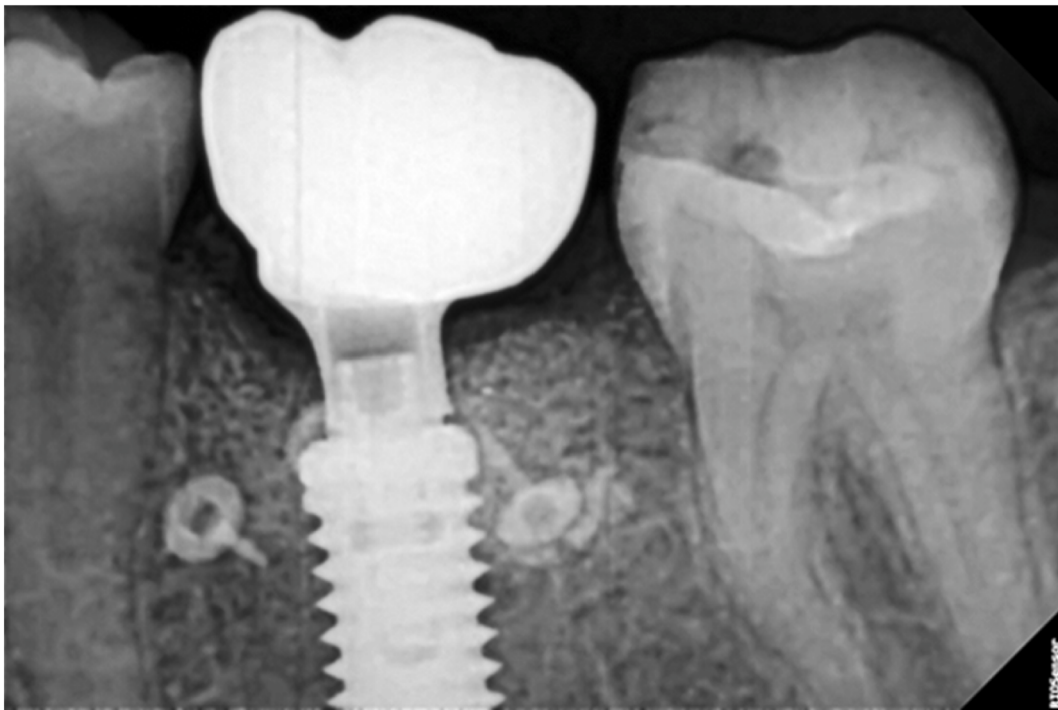


Fig. 14. Follow up periapical radiograph at 7 months shows adequate crestal bone stability.

## References

- [1] D.S. Thoma, S.P. Bienz, E. Figuero, R.E. Jung, I. Sanz-Martin, Efficacy of lateral bone augmentation performed simultaneously with dental implant placement: a systematic review and meta-analysis, *J. Clin. Periodontol.* 46 (Suppl 21) (2019) 257–276.
- [2] G. Lim, G.H. Lin, A. Monje, H.L. Chan, H.L. Wang, Wound healing complications following guided bone regeneration for ridge augmentation: a systematic review and meta-analysis, *Int. J. Oral Maxillofac. Implants* 33 (1) (2018) 41–50.
- [3] F. Fontana, E. Maschera, I. Rocchietta, M. Simion, Clinical classification of complications in guided bone regeneration procedures by means of a nonresorbable membrane, *Int. J. Periodontics Restorative Dent.* 31 (3) (2011) 265–273.
- [4] J.R.H. Tay, X.J. Lu, W.M.C. Lai, et al., Clinical and histological sequelae of surgical complications in horizontal guided bone regeneration: a systematic review and proposal for management, *Int. J. Implant Dent.* 6 (2020) 76, <https://doi.org/10.1186/s40729-020-00274-y>.
- [5] J. Garcia, A. Dodge, P. Luepke, H.L. Wang, Y. Kapila, G.H. Lin, Effect of membrane exposure on guided bone regeneration: a systematic review and meta-analysis, *Clin. Oral Implants Res.* 29 (3) (2018) 328–338.
- [6] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, for the SCARE Group, The SCARE 2020 guideline: updating consensus Surgical Case Report (SCARE) guidelines, *International Journal of Surgery* 84 (2020) 226–230.
- [7] T. Basler, N. Naenni, D. Schneider, C.H.F. Hammerle, R.E. Jung, D.S. Thoma, Randomized controlled clinical study assessing two membranes for guided bone regeneration of peri-implant bone defects: 3-year results, *Clin. Oral Implants Res.* 29 (5) (2018) 499–507.
- [8] S.M. Meloni, S.A. Jovanovic, I. Urban, E. Baldoni, M. Pisano, M. Tallarico, Horizontal ridge augmentation using GBR with a native collagen membrane and 1:1 ratio of particulate xenograft and autologous bone: a 3-year after final loading prospective clinical study, *Clin. Implant. Dent. Relat. Res.* 21 (4) (2019) 669–677.
- [9] G. Mendoza-Azpur, A. de la Fuente, E. Chavez, E. Valdivia, I. Khoully, Horizontal ridge augmentation with guided bone regeneration using particulate xenogenic bone substitutes with or without autogenous block grafts: a randomized controlled trial, *Clin. Implant. Dent. Relat. Res.* 21 (4) (2019) 521–530.
- [10] S. Ersanli, V. Arisan, E. Bedeloğlu, Evaluation of the autogenous bone block transfer for dental implant placement: symphyseal or ramus harvesting? *BMC Oral Health* 16 (2016) 4.
- [11] G.F. Tresguerres, Cortes ARG, G. Hernandez Vallejo, J. Cabrejos-Azama, F. Tamimi, J. Torres, Clinical and radiographic outcomes of allogeneic block grafts for maxillary lateral ridge augmentation: a randomized clinical trial, *Clin Implant Dent Relat Res.* 21 (5) (2019) 1087–1098.
- [12] H. Bakhishov, S.C. Isler, B. Bozyel, B. Yildirim, M.A. Tekindal, B. Ozdemir, De-epithelialized gingival graft versus subepithelial connective tissue graft in the treatment of multiple adjacent gingival recessions using the tunnel technique: 1-year results of a randomized clinical trial, *J. Clin. Periodontol.* 48 (7) (2021) 970–983.
- [13] G. Zucchelli, M. Mele, M. Stefanini, C. Mazzotti, M. Marzadori, L. Montebugnoli, M. De Sanctis, Patient morbidity and root coverage outcome after subepithelial connective tissue and de-epithelialized grafts: a comparative randomized-controlled clinical trial, *J. Clin. Periodontol.* 37 (2010) 728–738.