

Case Report

A Sinus Tract Following Prosthodontic Treatment with a Dental Implant: A Case Report

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Abstract

This article describes the cause of a sinus tract developed four years after implant-supported prosthodontic treatment. The sinus tract and pain appeared to be associated with an accidentally embedded piece of condensation silicone impression material. The residual material was removed by a simple surgical incision. Clinicians should be aware of the odds of this event and take it into consideration whenever there is a similar postoperative problem.

Key words: Dental impression materials, fistula, dental implant.

Introduction

Although implant-supported restorations have been proved to be predictable treatments for tooth replacements, pain and swelling following an implant procedure can be a significant problem.¹ These complications are sometimes easily solved without jeopardizing implant and prosthesis if diagnosed correctly. One of these complications is due the entrapment of impression materials in the gingival tissue during impression taking procedure. This procedure can be performed by either open tray or closed tray technique.²⁻⁵

There may be some reasons for pushing impression materials into the tissues around teeth or implants during impression taking. One of them is when there is a narrow and thin band of attached gingiva, especially when a deep retraction cord has been used⁶

prior to injection of the impression material. These procedures can contribute to disruption of sulcular junctional epithelium. In addition, during removal of the tray, thin pieces of some impression materials with inadequate tear strength might be torn off, particularly around the undercuts⁶ and remain in the tissues. Also immediate loading approach with impression taking intra-surgically, immediately after operation or during the second surgical stage which is done on open margins or just stitched tissues, could be probable reasons for entrapment of impression materials in implantology.⁷

Fragments of impression material that enter the epithelial attachment⁶ and remain in the tissues might produce a foreign body reaction.⁸ Impression materials may enter the soft tissues,⁹ sub-periosteum or even the cancellous bone.¹⁰ These fragments sometimes remain entrapped inside the flap or in the gin-

gival sulcus for a long time.¹¹ It has been reported that a balance between the aggression of the lesion and the host defense results in formation of a chronic inflammatory disease.¹² Polyether and polyvinyl siloxane impression materials may cause less severe irritation compared to polysulfides.¹³ There are some factors which might help immediate detection of accidentally embedded materials such as radiopacity of the material. Polysulfide impression material is the most radiopaque, while polyethers and polyvinyl siloxanes are the most radiolucent materials, and condensation silicone is in between.¹³ Also several studies have emphasized the importance of contrasting colors for impression materials for easy detection.¹³ Contrary to blue, green and pink colors, brown colored materials cannot easily be detectable against a red background.¹³

The purpose of this article was to present a case of a foreign body reaction caused by the remains of impression material and its subsequent removal.

Case Report

A 26-year-old male with a non-contributory medical history was referred due to constant pain (for about two weeks) in the gingiva of maxillary left canine which was replaced by a single implant-supported prosthesis (ITI; Straumann, Waldenburg, Switzerland) about four years previously. The implant was 3.5 mm in diameter and 14 mm in length, supporting a cemented single crown. The impression technique used for the patient was closed tray implant level technique using condensation silicone impression material (Speedex, Coltène Whaledent, USA) without placing a gingival retraction cord. The patient had not attended regular annual visits. The time span between completion of the prosthodontics treatment and the last visit was 4 years. Clinical examination revealed a sinus tract in the buccal gingiva of left canine corresponding to the location of pain. The gingiva of the left canine was slightly red compared to the adjacent pink gingiva (Figure 1). There was no sign of plaque-induced gingivitis or periodontal pocket. The radiograph showed no unusual bone loss related to the implant or adjacent teeth (Figure 2). Under local anesthesia with 2% lidocaine containing 1:200000 epinephrine (Xylocaine Viscous, Darou Paksh Co., Iran), the sinus tract was incised with a scalpel blade and small fragments of condensation silicone impression material and blood were expelled (Figure 3). The lesion healed after 10 days.

Discussion

In this case the pain was excluded from implant ori-



Figure 1. Clinical view showing the sinus tract.

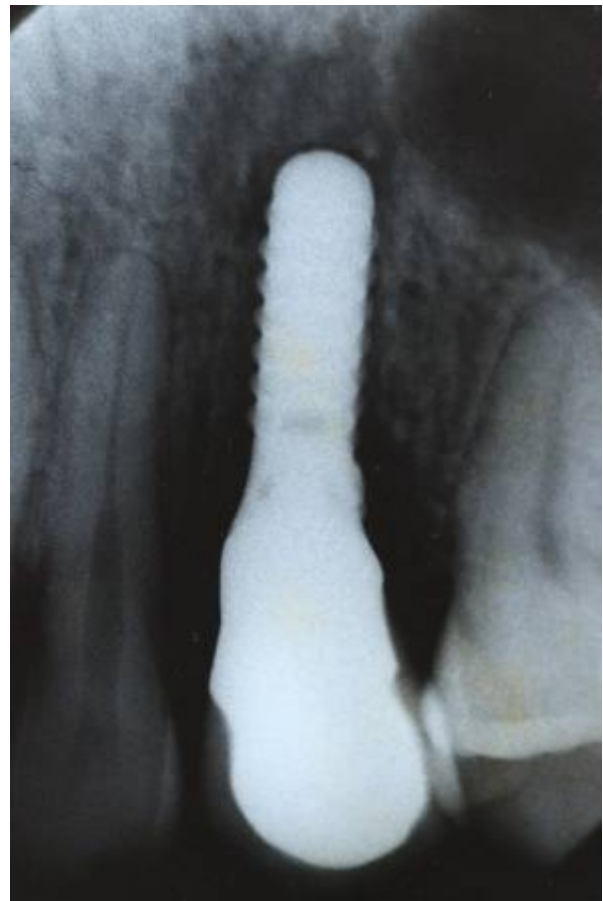


Figure 2. Radiograph showing the implant and adjacent teeth.

gin because there was no sign of loss of osseointegration and exceeding load, neither was it tender on biting and/or percussion. Furthermore, because of



Figure 3. Clinical view showing the piece of impression material expelled after incision.

sound periodontal tissues and normal pocket depth and absence of pus, existence of a peri-implantitis was improbable. Since the sinus tract originated from soft tissues, there was no radiolucency related to it in the x-ray images. The gingival damage was apparently the result of insertion of some pieces of impression material during impression taking about 4 years later. There are some differences between two conventional impression techniques (closed tray and open tray) used for implant level impression taking of implants. Since impression copings remain in the impression material after removal of open tray technique, the need for accurate repositioning of them back into the impression would be eliminated.^{2,3} However, blind attachment of impression coping to the implant replicas in the impression is a disadvantage of this technique.^{4,5} Nevertheless, it has been suggested that open tray technique be used for situations with multiple implants, especially with unfavorable angulations.^{2,3} On the other hand, closed tray technique is a simpler method recommended for posterior regions of the mouth or when there is limited inter-arch space or tendency to gag.^{4,5} In this case the impression technique was closed tray impression technique which seems suitable for a single implant. It appears there is no relation between these impression techniques and remaining of the impression material in the tissue. However, other factors such as exerting excessive pressure during impression procedure or presence of thin periodontium around the implant or combination of both might

have contributed to this problem.

A chronic inflammatory lesion is the result of balance between the lesion and the host defense mechanism.¹² In this case, it appears a decrease in the host defense for some reasons had resulted in the progression of the chronic lesion after years to an acute lesion. Since the junctional epithelium around implants is less adherent and more permeable compared to tooth, it is necessary to be more cautious when using retraction cords. Therefore use of retraction techniques for deep implants is limited.¹⁴

The main objective in reporting this case was to emphasize the importance of taking care in impression taking, especially in case of using retracting cords, and to draw attention to the fact that pain and swelling after implant and prosthodontic treatment may not necessarily be related to implant or prosthesis itself.

Conclusion

This paper indicated a foreign body reaction in the gingiva due to the remains of condensation silicone impression material which was found after four years of implant function. The residual impression materials were removed by a simple incision and the lesion healed after 10 days.

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