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Case Report

Invasive cervical root resorption 15 years after modified Widman flap surgery

Shuichi Sato[1,2], Akira Hasuike[1], Naoto Yoshinuma[1,2], and Koichi Ito[1,2]

[1]Department of Periodontology, Nihon University School of Dentistry, Tokyo, Japan
[2]Division of Advanced Dental Treatment, Dental Research Center, Nihon University School of Dentistry, Tokyo, Japan

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Abstract: Invasive cervical root resorption is a relatively uncommon form of external root resorption. Creeping attachment is defined as postoperative coronal migration of the gingival margin. We describe a case of invasive cervical root resorption following coronal shift of interdental papillae 15 years after modified Widman flap surgery.
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Keywords: cervical root resorption; interdental papilla; modified Widman flap surgery; SPT.

Introduction

Invasive cervical resorption is a relatively uncommon form of external root resorption. There may be no external signs, and resorption is often detected in a routine radiographic examination. The cause of invasive cervical resorption is unknown, but several predisposing factors have been suggested, including tooth reimplantation, orthodontics, intracoronal bleaching, root planing, segmental orthognathic surgery, flap replacement surgery, and guided tissue regeneration (1).

The loss of interdental papillae can lead to cosmetic deformities, speech problems, and lateral tooth impaction. A coronal shift of the gingival margin after mucogingival surgery is called creeping attachment. Goldman et al. (2) defined it as postoperative coronal migration of the gingival margin, and it typically occurs between 6 months and 1 year postoperatively (3). However, coronal shift of interdental papillae is not always predictable.

We describe a case of invasive cervical root resorption following coronal shift of interdental papillae long after modified Widman flap surgery.

Correspondence to Dr. Shuichi Sato, Department of Periodontology, Nihon University School of Dentistry, 1-8-13 Kanda-Surugadai, Chiyoda-ku, Tokyo 101-8310, Japan
Fax: +81-3-3219-8349 E-mail: satou.shuuichi@nihon-u.ac.jp

Case Report

A 55-year-old Japanese man visited the Department of Periodontology at Nihon University Dental Hospital, complaining of swollen gums. He was in good general health, his medical history was unremarkable, and his family history was noncontributory. A comprehensive periodontal examination with full-mouth radiographs revealed generalized severe periodontitis. He had smoked for 10 years but quit when he underwent periodontal treatment.

After initial therapy, modified Widman flap surgery was performed on teeth #13 through #23 (Fig. 1a, b). The probing depth ranged from 4 to 5 mm, and radiographic evaluation showed a horizontal bone defect. He recalled having supportive periodontal therapy (SPT) every 3 to 6 months during the 15-year period since periodontal surgery. SPT consisted of professional tooth cleaning with oral hygiene instruction, scaling, root planing, and polishing with a rotary instrument using polishing paste and a rubber cup (Fig. 2a, b).

At the 7-year SPT visit, the maxillary teeth were not mobile, and probing depths ranged from 2 to 3 mm, with no inflammation (Fig. 2b). The height of the marginal bone had not changed, although the crestal lamina dura was obvious (Fig. 3b).

At the 15-year SPT visit, greater coronal shift of interdental papillae was observed (Fig. 2c), and a radiograph revealed an irregular radiolucency in the cervical region (Fig. 3c).

Fig. 1 (a) Flap elevation in modified Widman flap surgery. (b) The flap is replaced in the same position.

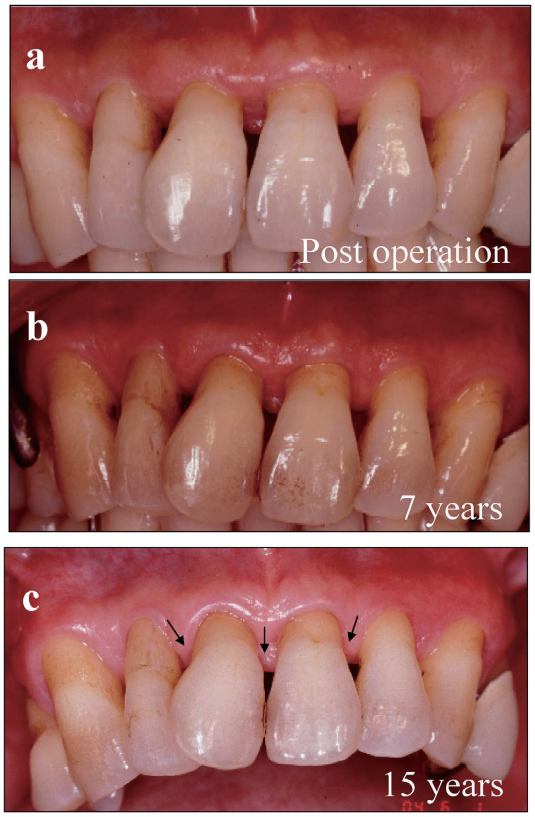

Fig. 2 (a) Postoperative view of the anterior maxilla. Black triangles shows at the interdental papillae. (b) Seven years after the modified Widman flap procedure. (c) Fifteen years after the modified Widman flap procedure. Arrows show coronal shift of interdental papillae.

Fig. 3 (a) Postoperative radiograph. (b) Radiograph taken 7 years after the modified Widman flap procedure. (c) Radiograph taken 15 years after the modified Widman flap procedure shows an irregular radiolucency in the cervical region. Arrows show the region of root resorption.

Discussion

The apicocoronal height of the marginal gingiva is increased after maintenance, due to several events during healing and maturation of the gingiva. Several months after grafting, creeping attachment may occur on a previously denuded root surface. Aimetti et al. (4) suggested that removal of microbial toxins from the exposed root surface and reduction of root convexity by scaling and root planing promote coronal shift of the gingival margin. Our patient underwent SPT for 15 years, which consisted

of scaling, root planing, and root surface polishing, and this might have produced conditions that led to coronal shift of interdental papillae.

Root resorption is not a common complication of periodontal surgery, despite the damage to the periodontal ligament and root surface that often occurs during reattachment (5). The reason for a general lack of root resorption after periodontal surgery appears to be protective downgrowth of the junctional epithelium, which prevents resorption of the damaged root surface. Our patient underwent a reattachment procedure using a modified Widman flap. Therefore, the long junctional epithelium likely prevented a resorptive attack on the root surface. However, when epithelial downgrowth is retarded by coronal positioning of a flap, the root surface can show marked resorption (6).

A few studies reported cervical root resorption as a late complication after periodontal surgery (7,8). In our case, no root resorption was present at 7 years after periodontal surgery, although it was observed at 15 years. In patients aged 17 to 39 years root resorption was found to proceed at a slower rate than in patients aged 8 to 16 years (9). However, we could not determine when resorption began in our patient, as no radiographs were available for the period from 7 to 15 years after surgery. Andreasen et al. (10) stated that only external root resorption requires treatment. Therefore, we have opted to simply monitor our patient.

The mechanism underlying coronal shift of interdental papillae and cervical root resorption is unclear, and these processes are not predictable. Further clinical studies are needed to confirm this phenomenon.

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