

# Multidisciplinary Decision-Making: The “Real-World” Clinical Scenarios

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## 7.1 Potential Clinical Scenarios: Treatment Approaches for Natural Teeth Requiring Periodontal Plastic Surgery



**Fig. 7.1** Case I – 1 (a–h). *Treatment planning*: nonsurgical periodontal therapy (supra- and subgingival scaling) and conventional gingivectomy at the anterior sextant of the mandible via external beveled incision. Baseline (a). After basic procedures (b). Identification of the

remaining pseudo-pockets (c, d). Pseudo-pockets surgically removed (e). One-week follow-up (f). Four-month follow-up (g). Achievement of a normal probing depth (h)



**Fig. 7.2** Case II – 2 (a–c). *Treatment planning*: nonsurgical periodontal treatment (supra- and subgingival scaling and root planing) and frenectomy (with periosteal fenestration) at the anterior sextant.

Baseline – Class III gingival recessions anterior of the mandible (a). After basic procedures – frenum surgically removed (b). Six-month follow-up – significant reduction of the gingival recession on tooth 41 (c)



**Fig. 7.3** Case III – 3 (a–v). *Treatment planning:* nonsurgical periodontal therapy (supra- and subgingival scaling and root planing), periodontal regeneration with bone substitute (infra-osseous defect between teeth 14 and 15), and root coverage (subepithelial connective tissue graft-based procedures) at mandibular gingival recessions. Baseline (a). Diagnosis of localized aggressive periodontitis (b, c). Presence of deep pockets (d). Infrabony defect after debridement (e). Defect – filled with bone substitute (g). Flap repositioned and sutured (h). Baseline – recession on teeth 44 and 45

(i). Baseline – closer view of the Class I and II recessions (j). Horizontal incision (k). Flap raised and graft sutured over recessions (l). Flap coronally advanced and sutured (m). Baseline – Class I gingival recession on tooth 34 (n). Tunnel flap raised (o). Graft interposed and sutured between the root surface and the tunnel flap (p). Donor site sutured (q). One-year follow-up after the last surgical procedure (r). One-year follow-up – right side (s). One-year follow-up – left side (t). One-year follow-up – teeth 44 and 45 (u). One-year follow-up – tooth 34 (v)



**Fig. 7.3** (continued)



**Fig. 7.4** Case IV – 4 (a–k). *Treatment planning:* nonsurgical periodontal therapy (supragingival scaling) and root coverage (subepithelial connective tissue graft+coronally advanced flap and modified coronally advanced flap) on the right side of the maxilla. Baseline (a). Baseline – after basic procedures (b). Realizing incisions performed adjacent to a Class II recession defect on tooth 13 (c). Flap raised by sharp dissection

(d). Root planing (e). Soft tissue graft being sutured over the recession (f). Three-month follow-up (g). Shallow Class I recessions present at teeth 11 and 12 (h). Double semilunar coronally advanced flap (i). One-month follow-up (j). Six-month follow-up (tooth 13), and 3-month follow-up (teeth 11 and 12) (k)

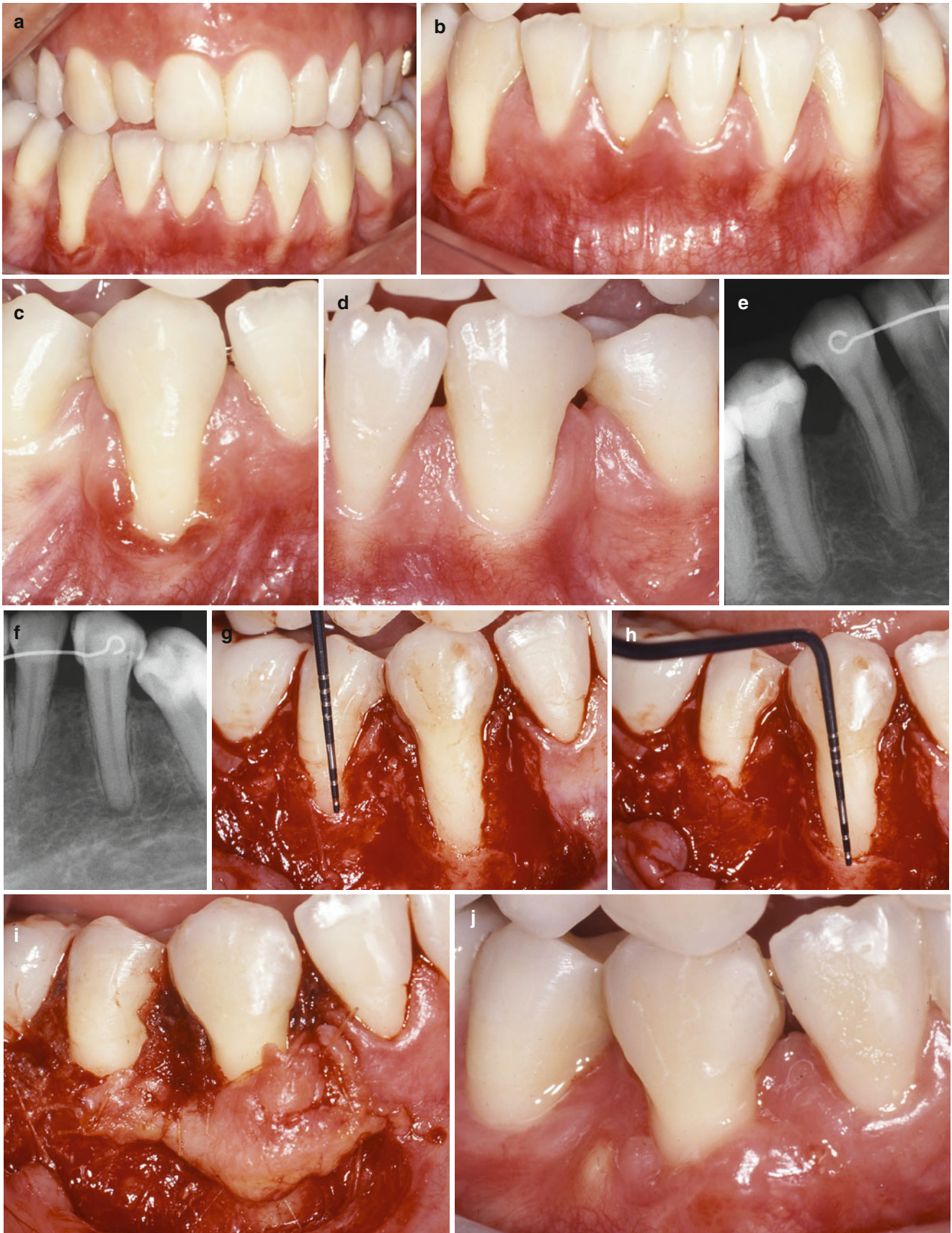


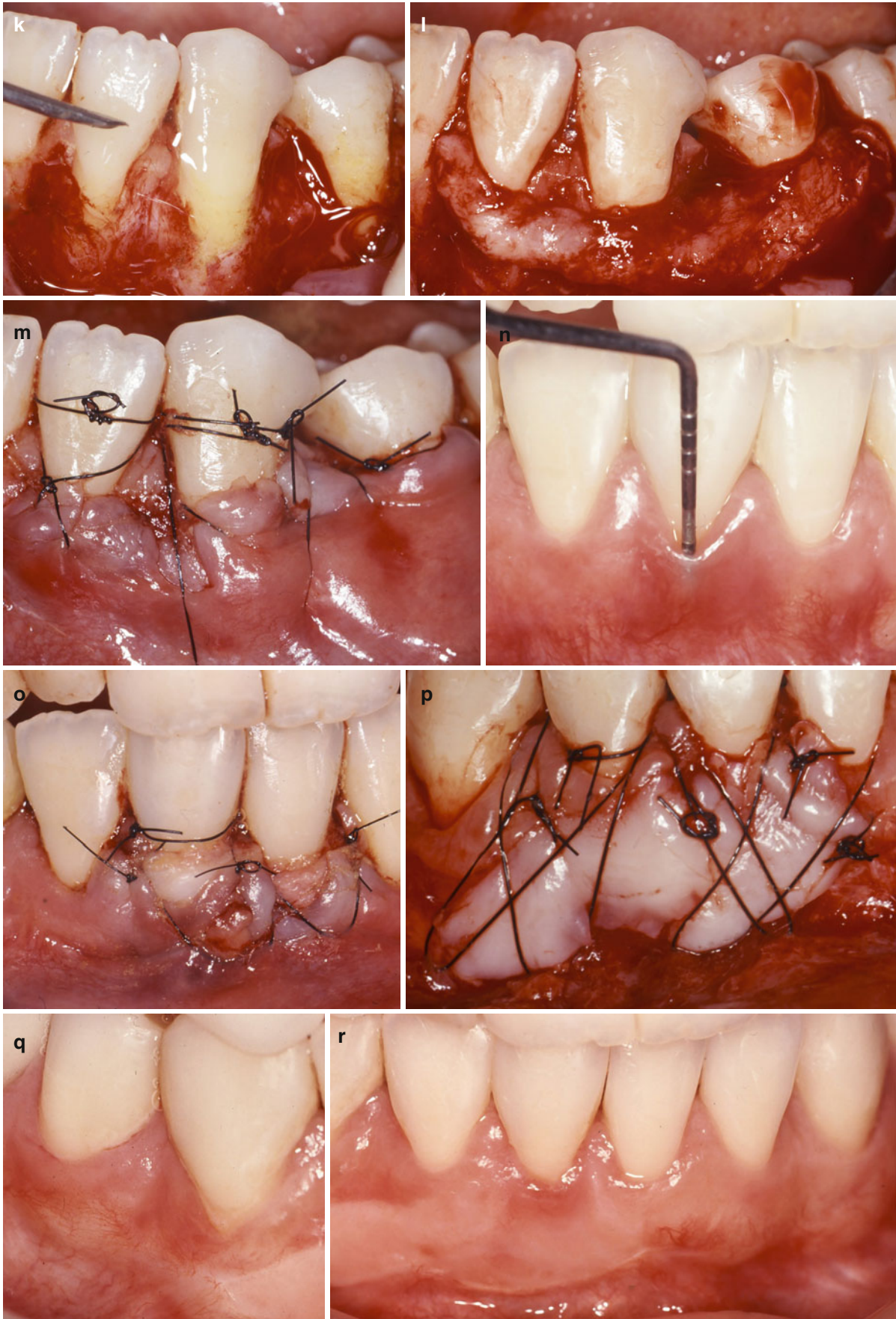
**Fig. 7.5** Case V – 5 (a–d). *Treatment planning:* nonsurgical periodontal therapy (supraperiapical scaling) and removal of the pyogenic granuloma associated to a free gingival graft (\*note of the authors – this lesion was diagnosed in a pregnant woman with gingivitis, and the

surgical phase of treatment was conducted after the baby's birth). Baseline – presence of a pyogenic granuloma adjacent to tooth 46 (a). Lesion removed and recipient site prepared to be grafted (b). Graft sutured to the recipient site (c). Four-month follow-up (d)

**Fig. 7.6** Case VI 6 (a–r). *Treatment planning:* nonsurgical periodontal therapy (supra- and subgingival scaling), root coverage (subepithelial connective tissue graft+coronally advanced flap), and biotype modification (free gingival graft) at multiple sites of the mandible. Baseline (a, b). Class III gingival recession – tooth 43 (c). Class III gingival recession – tooth 33 (d). Radiographic interproximal bone loss associated to orthodontic extraction of the first mandibular bicuspids (e, f). Extension of bone dehiscence over the root surface of tooth 45 (g). Extension of bone dehiscence over the root surface of tooth 43 (h).

Graft sutured over the root surface of teeth 43 and 45 (i). Two-month follow-up (j). Recipient site being prepared to accommodate the graft (k). Graft coronally advanced and sutured (m). Baseline probing depth on tooth 41 (n). First surgical procedure at the mandibular incisors – submerged graft (o). Five months after the connective graft procedure, a free gingival graft was used to increase the thickness of keratinized tissue (p). Four-month follow-up after the last surgical procedure (q, r)





**Fig. 7.6** (continued)





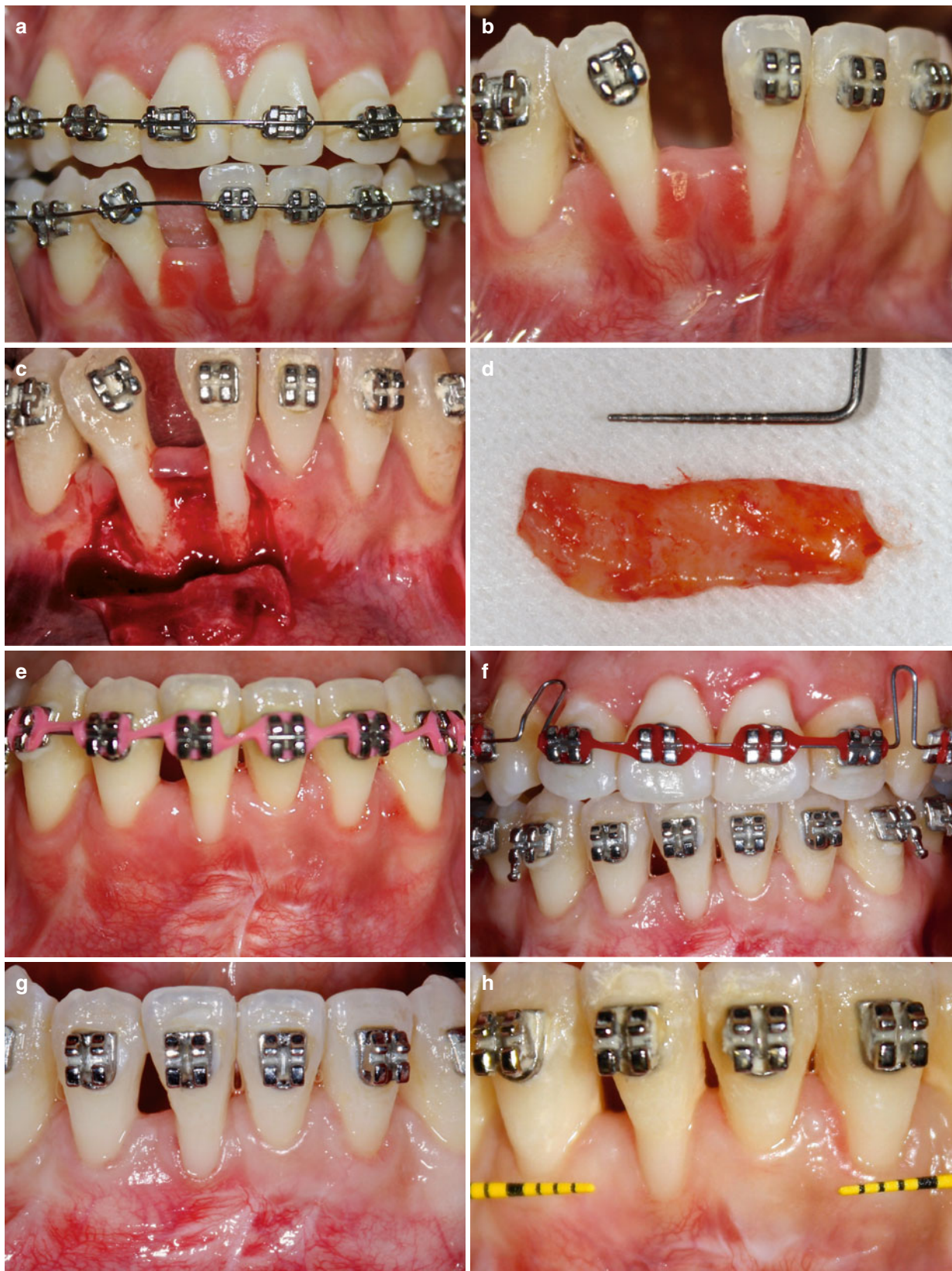
**Fig. 7.7** Case VII – 7 (a–e). Treatment planning: nonsurgical periodontal therapy (supra- and subgingival scaling and root planning), frenectomy, and biotype modification concomitant orthodontic treatment. Baseline – Class IV gingival recession on teeth 31 and 41 developed during the

orthodontic treatment associated to dental biofilm accumulation and high muscle insert close to the gingival margin (a). Frenum removed and osseous defect debrided (b). Length of the graft harvested from the palate (c). Graft sutured at the recipient site (d). Six-month follow-up (e)



**Fig. 7.8** Case VIII – 8 (a–h). *Treatment planning:* nonsurgical periodontal therapy (supragingival scaling), frenectomy, and biotype modification concomitant orthodontic treatment. Baseline – single Class II recession defect on tooth 41 associated to dental biofilm accumulation

and a high lip frenum (a, b). Frenum and epithelial layer of the gingiva removed (c). Graft harvested from the palate (d). Graft sutured to the recipient site covering the recession (e). Three-month follow-up (f). One-year follow-up (g, h)



**Fig. 7.9** Case IX – 9 (a–m). *Treatment planning*: nonsurgical periodontal therapy (supra- and subgingival scaling), root coverage (subepithelial connective tissue graft+coronally advanced flap), and biotype modification (free gingival graft) concomitant orthodontic treatment. Baseline – aggressive periodontitis patient periodontally treated and submitted to fixed orthodontics (a). Class III recession on teeth 31 and 41 associated gingival margin inflammation (b). Flap

raised (c). Connective graft harvested from palate (d). Six-month follow-up (e). Six-month follow-up – baseline of the second surgical procedure (f). Baseline – second surgical procedure (g). Checking some gingival dimensions (h). Recipient site prepared to accommodate the second graft (i). Graft sutured to the recipient site (j). Three-month follow-up – second surgical procedure (k, l). Six-month follow-up – second surgical procedure (m)

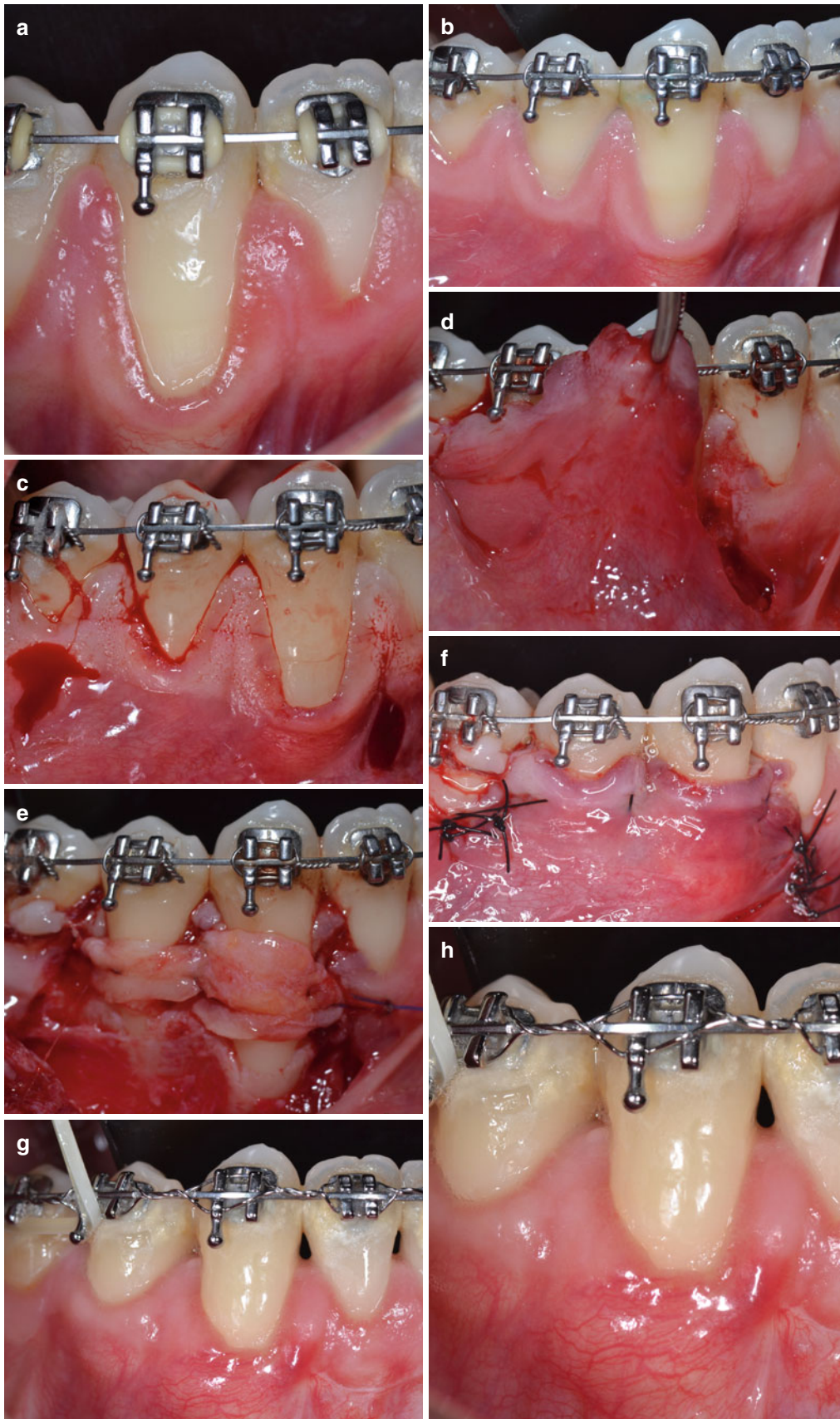


Fig. 7.9 (continued)



**Fig. 7.10** Case X – 10 (a–d). *Treatment planning:* nonsurgical periodontal therapy (supragingival scaling) and root coverage (subepithelial connective tissue graft+coronally advanced flap) concomitant orthodon-

tic treatment. Baseline – Class III gingival recessions on teeth 41 and 42 (a). Graft sutured at the recipient site (b). Checking flap tension (c). Six-month follow-up (immediately before periodontal maintenance) (d)



**Fig. 7.11** Case X1 – 11 (a–h). *Treatment planning*: nonsurgical periodontal therapy (supragingival scaling) and root coverage (subepithelial connective tissue graft+coronally advanced flap) concomitant orthodontic treatment. Baseline (a). After basic procedures – Class I

and II recession defects on teeth 44 and 43 (b). Horizontal and vertical incisions performed (c). Graft sutured over the recessions (d). Checking flap tension (e). Flap coronally advanced and sutured (f). One-year follow-up (g, h)



**Fig. 7.12** Case XII – 12 (a–j). *Treatment planning:* aesthetic clinical crown lengthening of the anterior maxillary teeth after orthodontics and installation of porcelain veneers. Baseline (a, b). Gingival collar removal (c). Crown lengthening was achieved only with gingivectomy – external beveled incisions (d). Smile 3 months after surgery (e).

Gingival contour around central incisors (f). Three-month follow-up (g). Three-month follow-up – lateral view (h). Six-month follow-up – porcelain veneer crowns were installed to improve anterior upper teeth's aesthetics (i). Six-month follow-up lateral view (j)



**Fig. 7.12** (continued)



**Fig. 7.13** Case XIII – 13 (a–e). Periodontal biotype modification (subepithelial connective tissue grafts) and installation of porcelain full-crown restorations. Baseline – smile (a). Baseline – lateral view (b). Baseline – clinical conditions (c, d). One year after grafting – full-crown restoration installed (e)



**Fig. 7.14** Case XIV – 14 (a–f). *Treatment planning:* nonsurgical periodontal therapy (supra- and subgingival scaling and root planning), biotype modification (free gingival graft), and orthodontic teeth alignment (mandible). Baseline – frontal view of two Class IV gingival recessions on teeth 31 and 41 (a). Baseline – lateral view (b). Removal of the epithelial layer of the gingiva adjacent to the recessions (c). Graft sutured to the recipient site (d). Obtaining of adequate space for central incisors alignment (e). Central incisors correctly aligned to in the mandibular arch approximately 6 months after surgery (f)



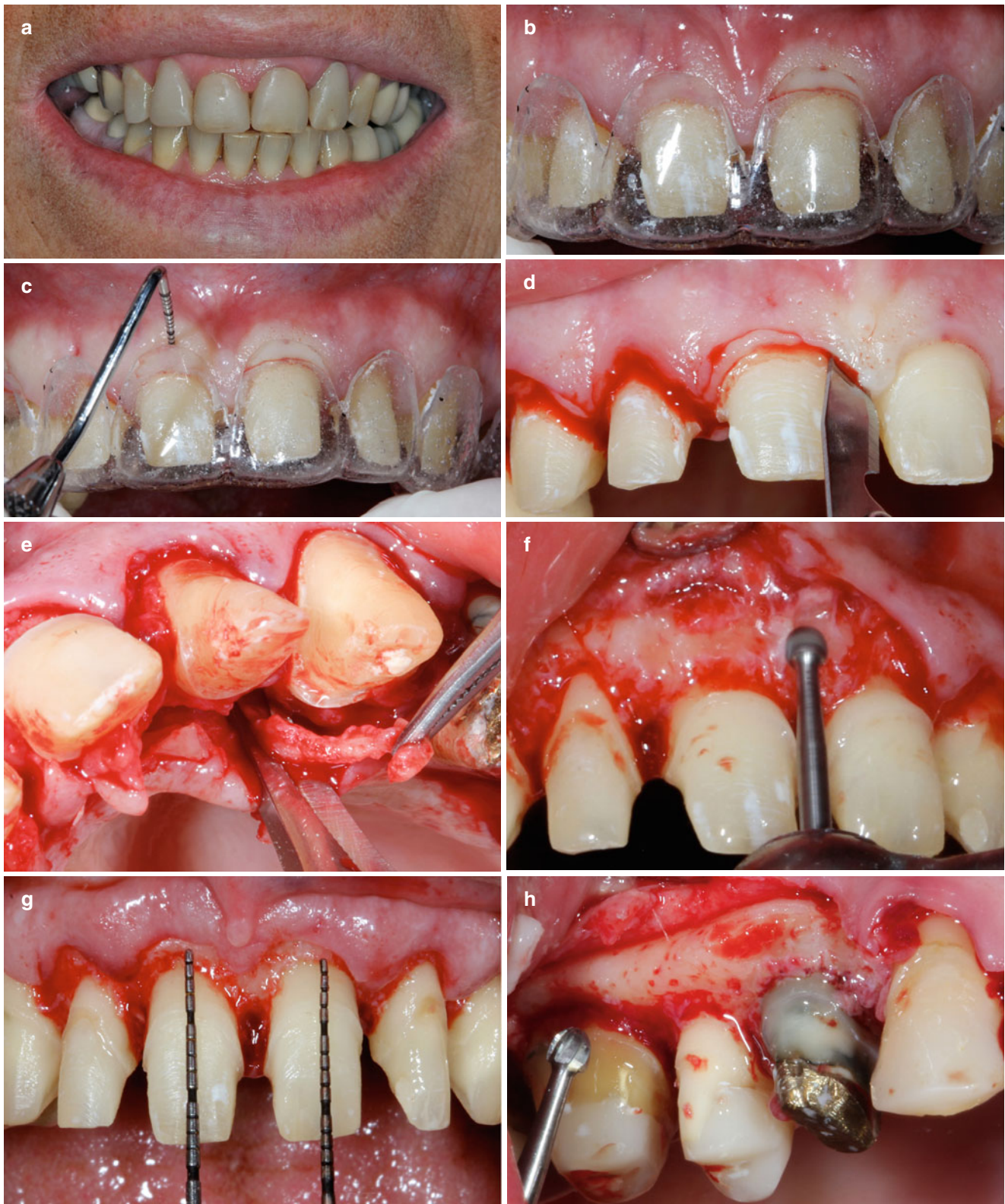


**Fig. 7.15** Case XV 15 (a–l). *Treatment planning*: nonsurgical periodontal therapy (supra- and subgingival scaling), clinical crown lengthening, and installation of porcelain veneers. Baseline (a–c). External beveled incisions (d). Gingival collars being removed (e).

Gingival collars removed (f). Following flap raising and osseous recontour (g). Flap apically positioned and sutured (h). Two-week follow-up (i). Four months after the surgical procedure – restorations installation (j, k). One year after the surgical procedure (l)



**Fig. 7.15** (continued)

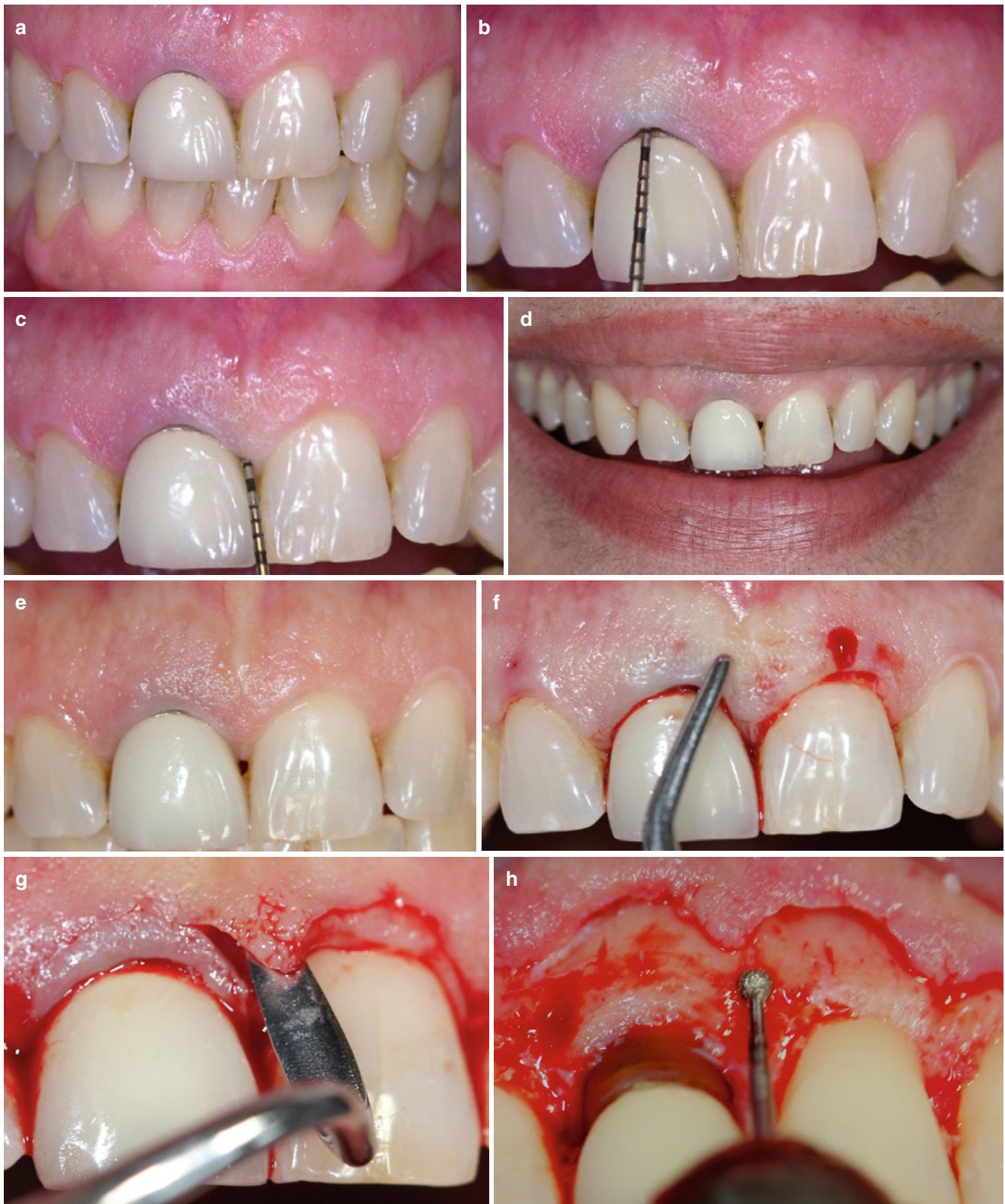


**Fig. 7.16** Case XVI – 16 (a–p). *Treatment planning*: nonsurgical periodontal therapy (supra- and subgingival scaling), clinical crown lengthening, and installation of full-crown porcelain restorations. Baseline – smile (a). Clinical mock-up in positions (b). Delimitations of the new position of the gingival margin (c). Internal beveled incision (d, e). Osteotomy (f). Checking the distance between the bone crest and the margins of the future restorations (g). Osteotomy – posterior region of the maxilla (h).

Checking the distance between the bone crest and the margins of the future restorations (i). Surgical site ready for suture (j). Occlusal view of the surgical sites before suture (k). Flap positioned apically and sutured (l). Six-month follow-up – restorations installed (m). Final result (n). Final result – smile (o). Final result – improved aesthetics and clinical gingival health (p)



**Fig. 7.16** (continued)



**Fig. 7.17** Case XVII 17 (a–p). *Treatment planning:* clinical crown lengthening of the maxillary incisors and single-crown restoration (tooth 11). Baseline (a). Baseline – probing depth (b, c). Baseline – smile (d). Baseline (e). Delimitation of the new gingival margins (f). Removing the gingival collar (g). Osteotomy (h). Assessment of the

distance between the bone crest and the cemento-enamel junction – tooth 21 (i). Checking the height of the bone crest on both central incisors (j). Additional osteotomy with chisels (k). Final level of the bone crests (l). Flap positioned apically and sutured (m). Full-crown restoration installed in tooth 21 (n). Final result – smile (o). Final result (p)



**Fig. 7.17** (continued)





**Fig. 7.18** Case XVIII – 18 (a–m). *Treatment planning:* clinical crown lengthening and change of full-crown restorations invading the biologic width by a new set of porcelain crowns. Baseline – inflamed gingival tissue surrounding teeth 12, 11, and 21 due to the improper position of the full-crown margins (a–e). Gingival collars excised – teeth 12, 11, and 21 (f). Full-thickness flap raised (g). Bone crest remodeled (h). Flap positioned

apically and sutured (i). Three-week follow-up (j). One-month follow-up (k). Old crowns removed (l). Provisional restorations installed (m). Smile – provisional restoration (n). Provisional restoration – smile lateral view (o). Two-month follow-up (p). Two-month follow-up – smile (q). Two-month follow-up – smile lateral view (r). Two-month follow-up – smile lateral view (s). Definitive crowns – 4-month follow-up (t–x)



**Fig. 7.18** (continued)



**Fig. 7.18** (continued)



Fig. 7.18 (continued)



**Fig. 7.19** Case XIX – 19 (a–p). *Treatment planning:* nonsurgical periodontal therapy (scaling and root planning), orthodontic treatment of the upper arch (intrusion and repositioning of tooth 23), and root coverage (subepithelial connective tissue graft+enamel derivative protein+coronally advanced flap). Baseline (a). Baseline – lateral view (b). Baseline – right side (c). Baseline – left side (d). Baseline – closer view of the positioning of tooth 23 (e). Before basic procedures (f). Probing depth before basic procedures (g). Probing depth before basic procedures (h). Probing depth before basic procedures (i). Location of the contact points (j). After basic procedures (k). Probing depths after basic procedures (l). Orthodontic appliance being prepared (m). Orthodontic appliance – lateral view (n). Mini implants used for tooth intrusion (o). Mini implants used for tooth intrusion – buccal view (p). Mini implants used for tooth intrusion – occlusal view (q). Mini implants used for tooth intrusion – lateral view (r). Partial intrusion of tooth 23 – frontal view (s). Partial intrusion of tooth 23 – close frontal view (t). Partial intrusion of tooth 23 – buccal view (u). Partial intrusion of tooth

23 – lateral view (v). Partial intrusion of tooth 23 – occlusal view (w). Regular checking of probing depths during orthodontic treatment (x). Regular checking of probing depths during orthodontic treatment (aa). Regular checking of recession depth during orthodontic treatment (bb). Final result after orthodontic treatment – buccal view (cc). Probing depths after orthodontic treatment (dd). Final result after orthodontic treatment – frontal view (ee). Final result after orthodontic treatment – occlusal view (ff). Final result after orthodontic treatment – occlusal view (gg). Flap raised (hh). Mechanical root preparation (ii). Graft being harvested from palate (jj, kk). Dimensions of the harvested graft (ll). Root surface after mechanical treatment (mm). Chemical preparation of the root surface (nn). Graft sutured over the recession (oo). Enamel matrix derivative (pp). Enamel matrix protein being applied between the root surface and the graft (qq). Clinical aspect after the application of the protein (rr). Flap being positioned (ss). Flap coronally advanced and sutured (tt). Final result – 4-month follow-up (uu, vv). Probing depth – 4-month follow-up (ww, xx, aaa)



Fig. 7.19 (continued)



**Fig. 7.19** (continued)

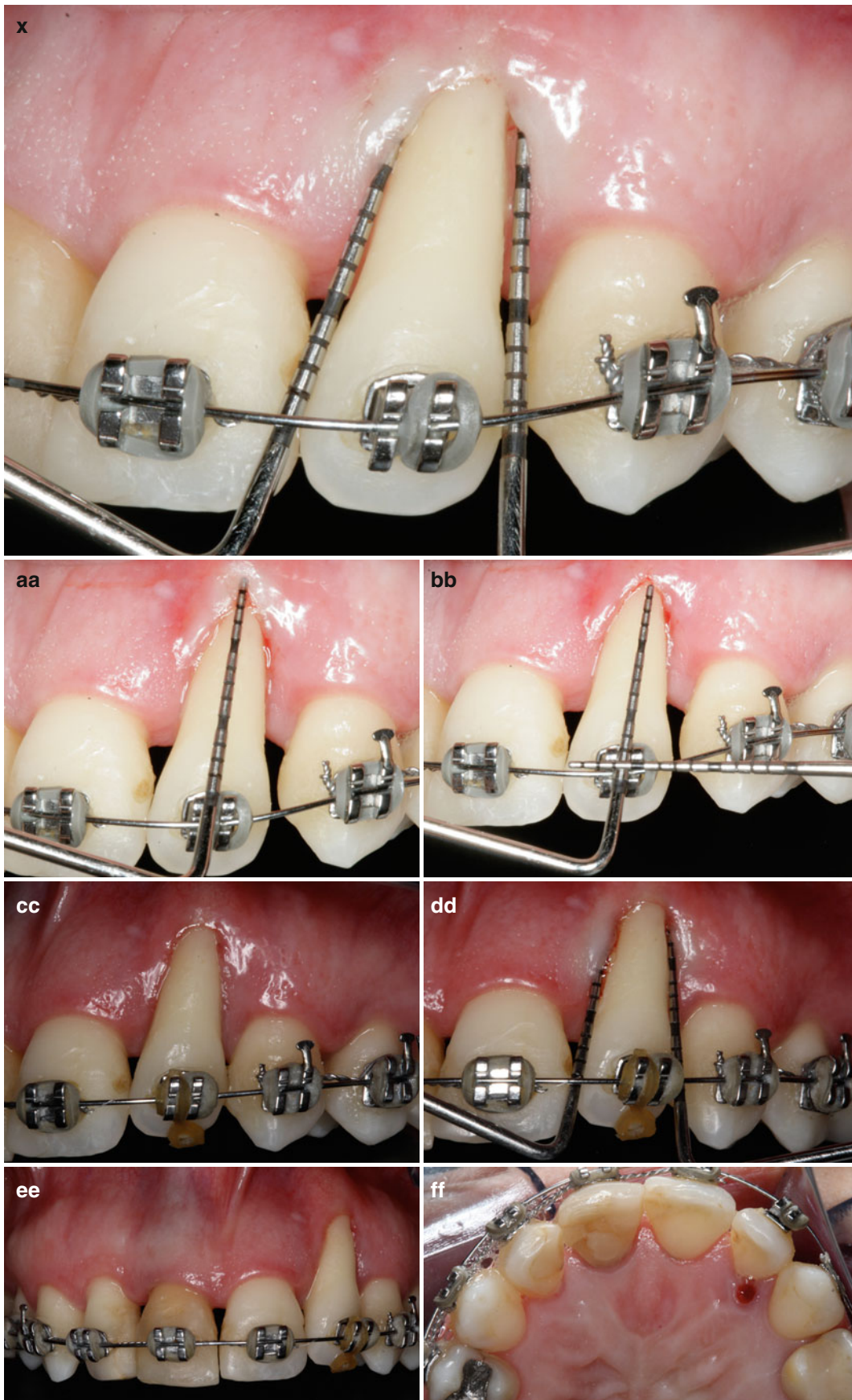
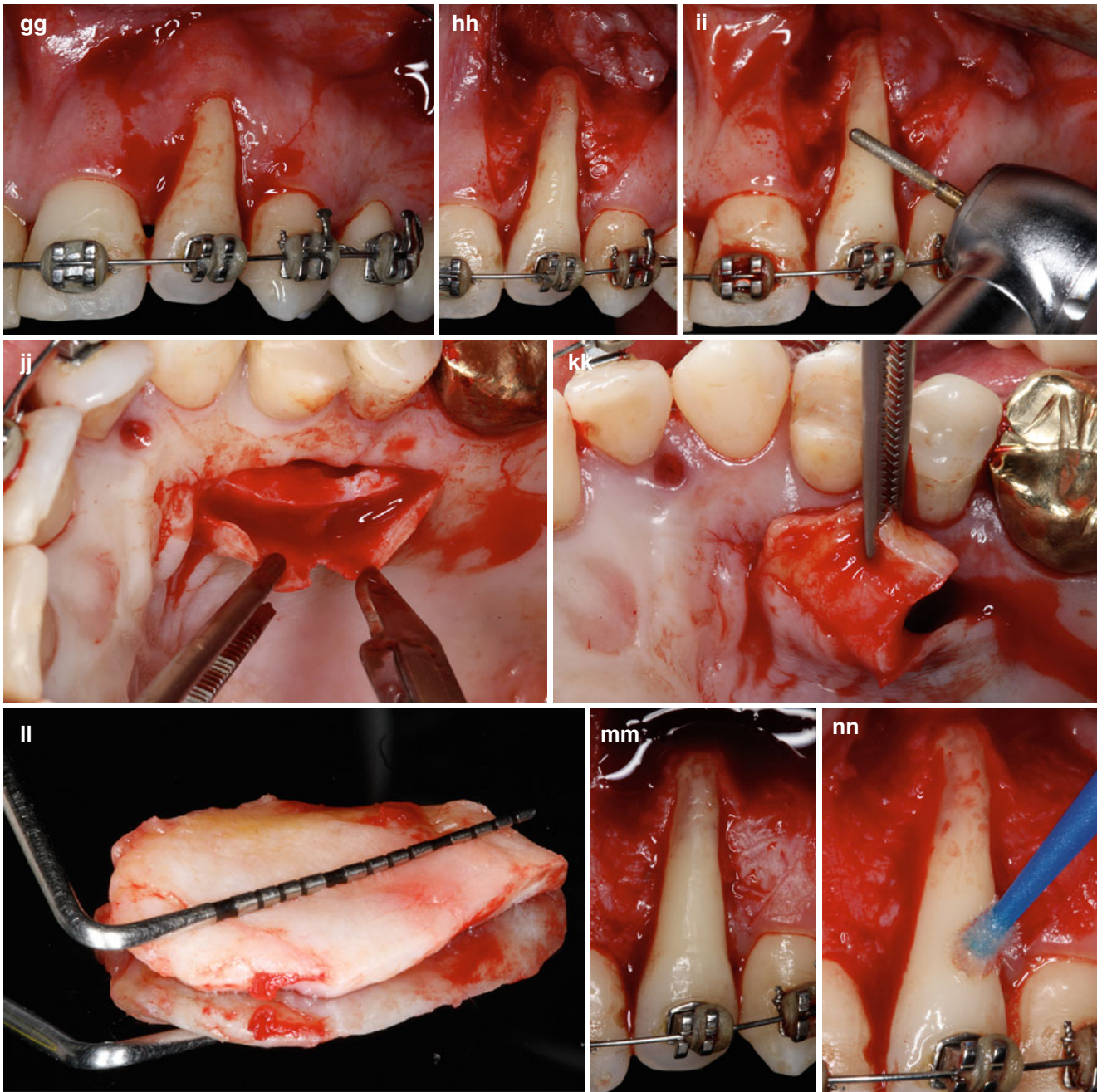


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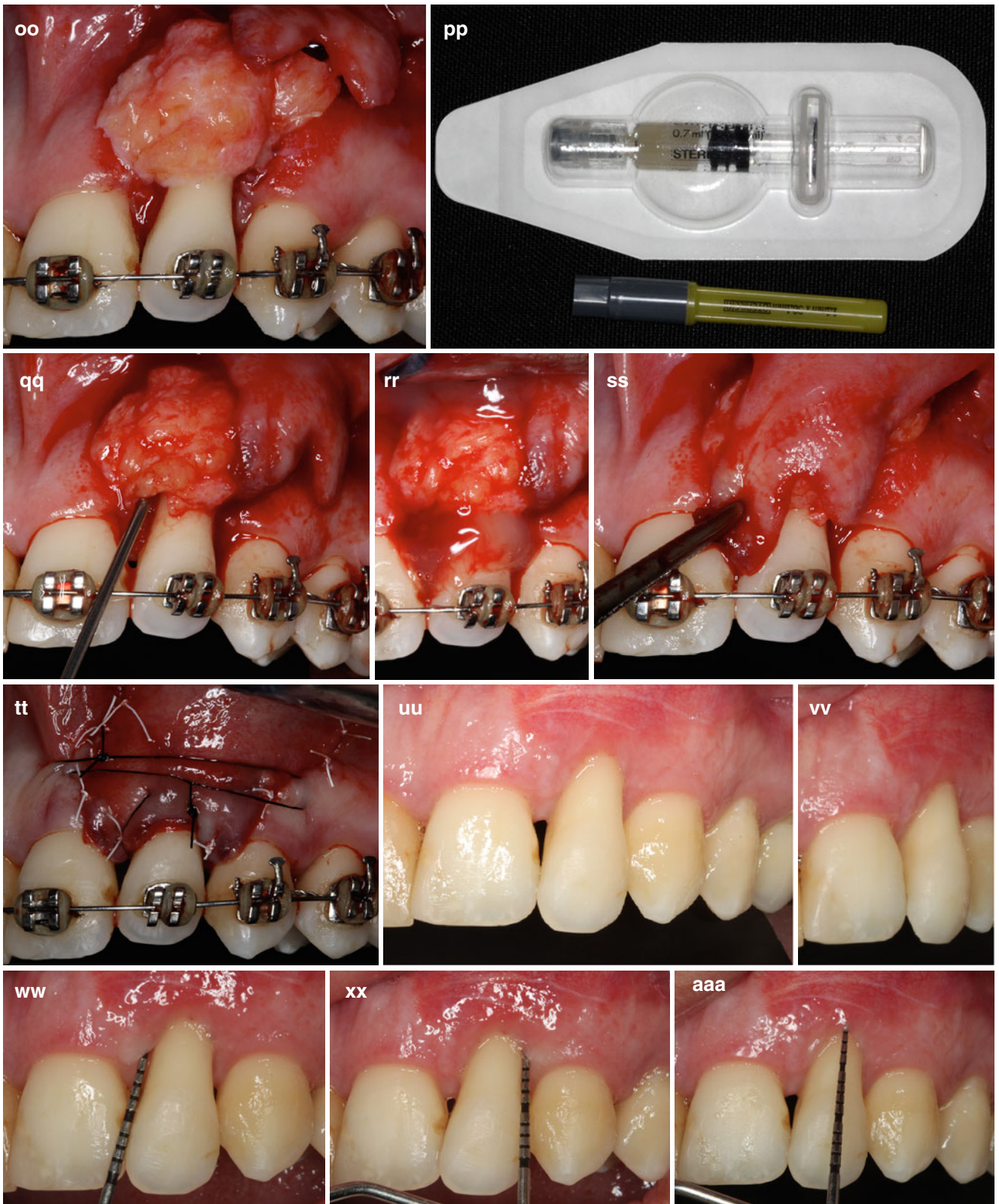


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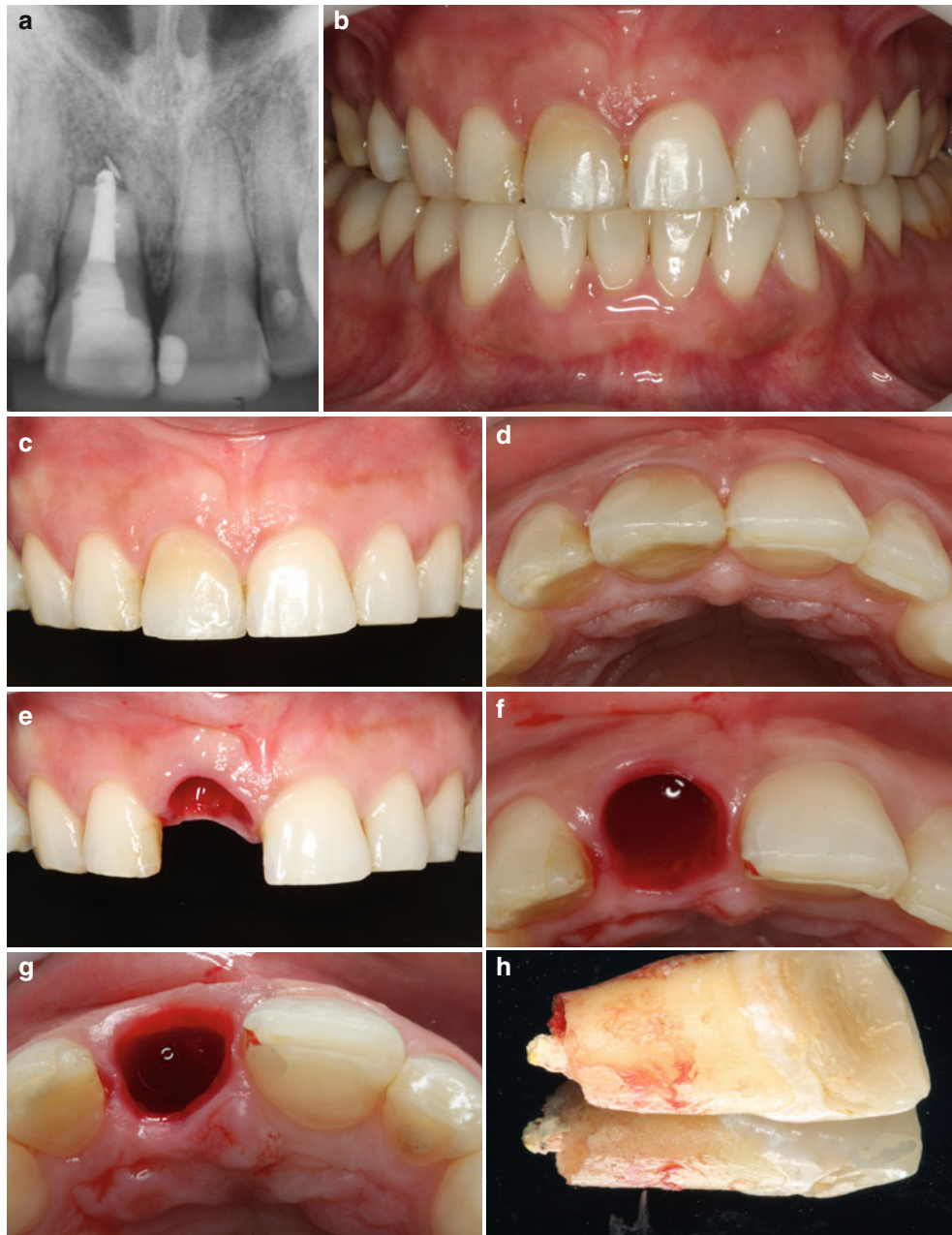
**Fig. 7.20** Case XX – 20 (a–s). *Treatment planning*: orthodontic tooth extrusion (with fiberotomy) and clinical crown lengthening of maxillary incisors (case conducted with the participation of Dr. Rodrigo Carlos Nahas de Castro Pinto). Baseline (a–d). Orthodontic appliance being prepared (e). Orthodontic appliance activated (f). Buccal intrasulcular incision (g). Palatal intrasulcular incision (h). Scaling and root planning – buccal site (i). Scaling and root planing – palatal site (j).

Two weeks after the beginning of treatment (k). Final orthodontic result – 6 weeks of activation followed by 16 weeks of wait (l). Final orthodontic result – occlusal view (m). Final result after the removal of orthodontic appliance (n). Baseline radiograph (o). Final radiograph – evident positive changes in the interproximal bone may be seen (p). Gingival collar removal around central incisors (q). Osteoplasty (r). Final results (s)



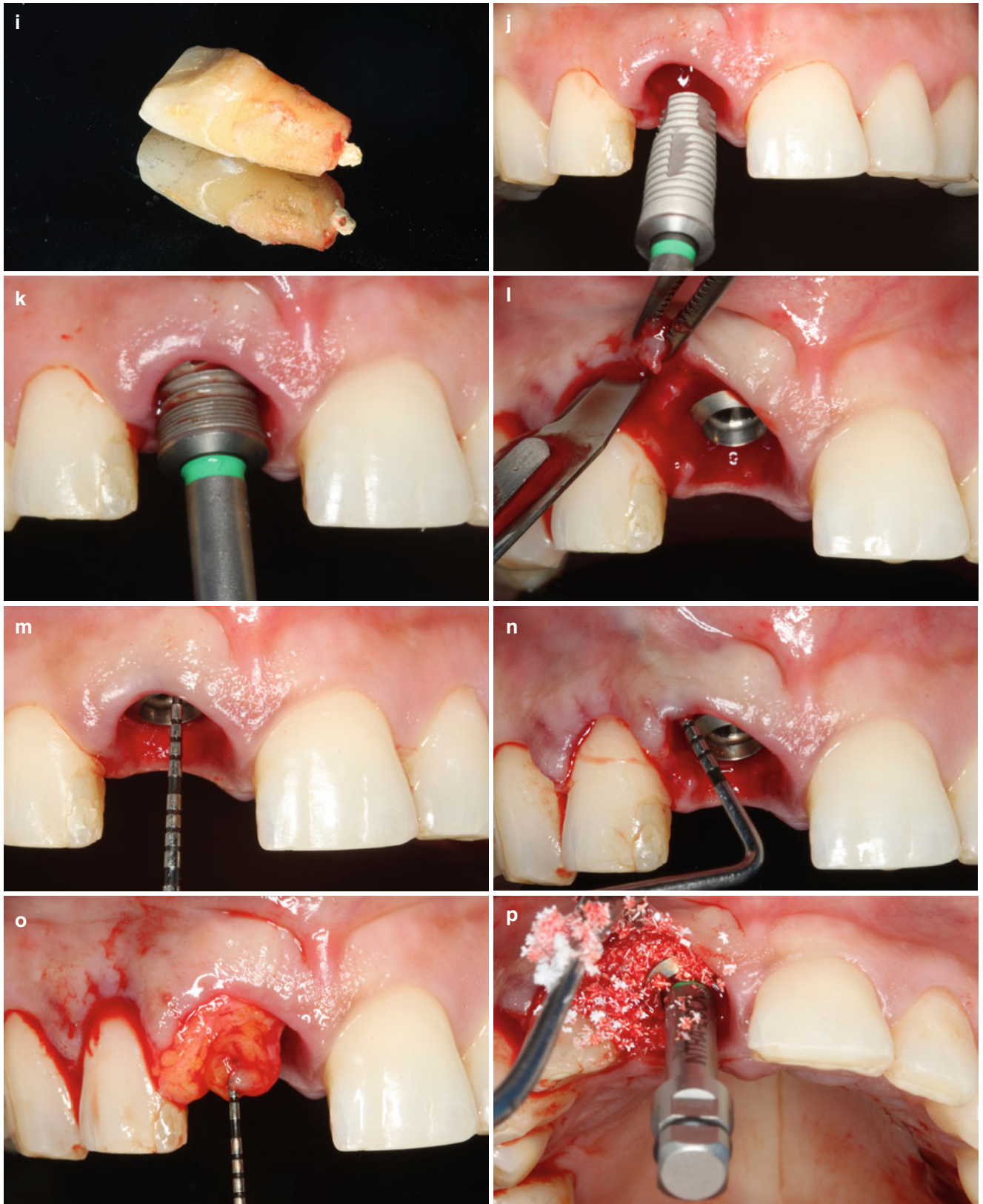
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## 7.2 Potential Clinical Scenarios: Treatment Approaches for Implant Sites Requiring Perimplant Plastic Surgery

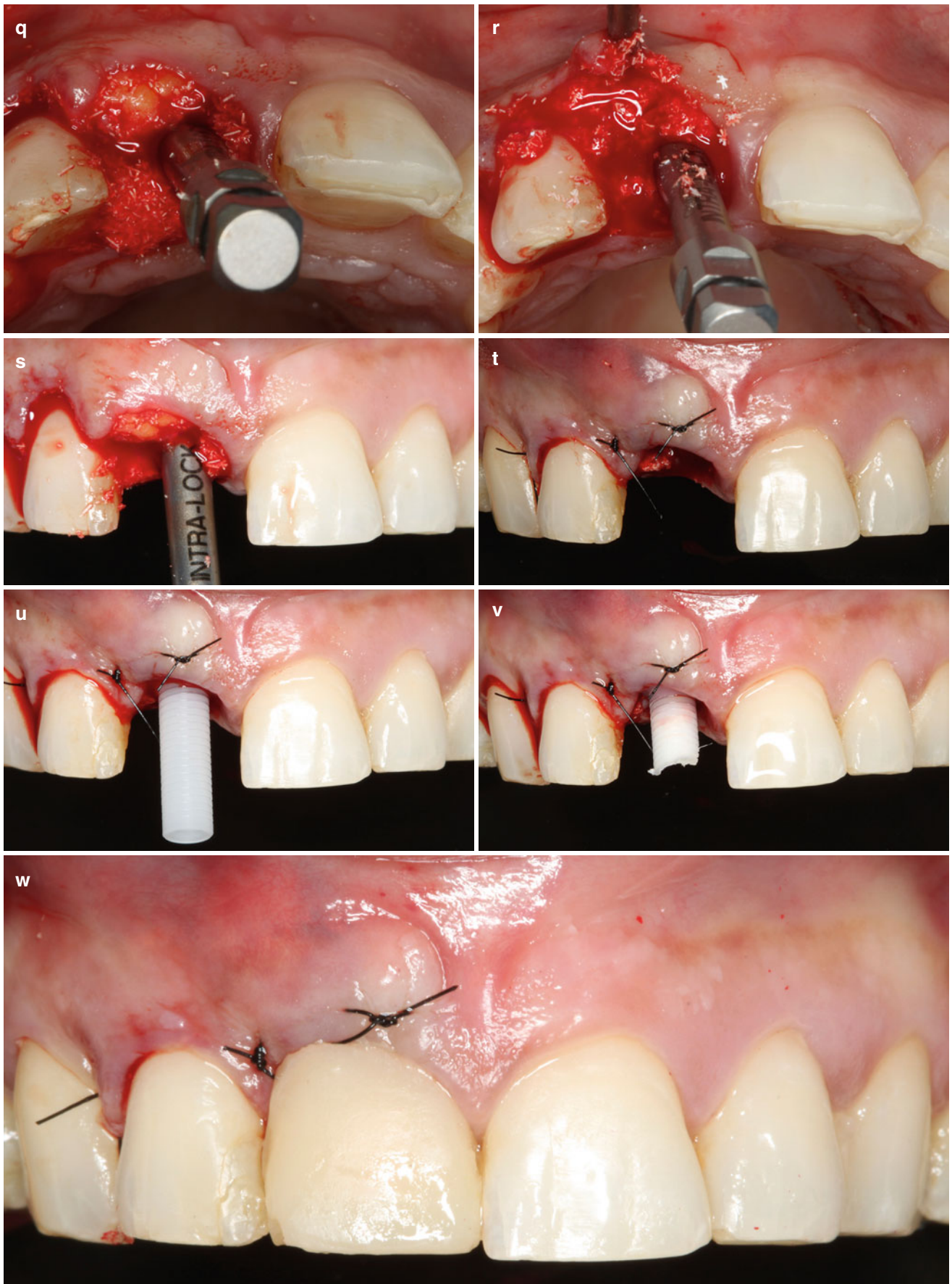


**Fig. 7.21** Case XXI – 21 (a–h). Treatment planning: atraumatic tooth extraction of tooth 11 due to external root resorption, immediate implant placement, soft tissue augmentation with subepithelial connective tissue graft, socket filling/provision preservation with alloplastic bone substitute, immediate provisional restoration (without occlusal contact), and definitive porcelain cemented single-crown restoration 6 months after surgical procedures. Baseline – external resorption at the root apex (a). Baseline – clinical aspect (b, c). Baseline (occlusal view) (d). Atraumatic tooth extraction (e). Post-extraction ridge – occlusal view (f, g). Extracted tooth – external resorption. Case XXI–21 (i–x). Extracted tooth – external resorption (i). Immediate implant placement (j, k). Partial-thickness flap dissection (m). Checking the position of the

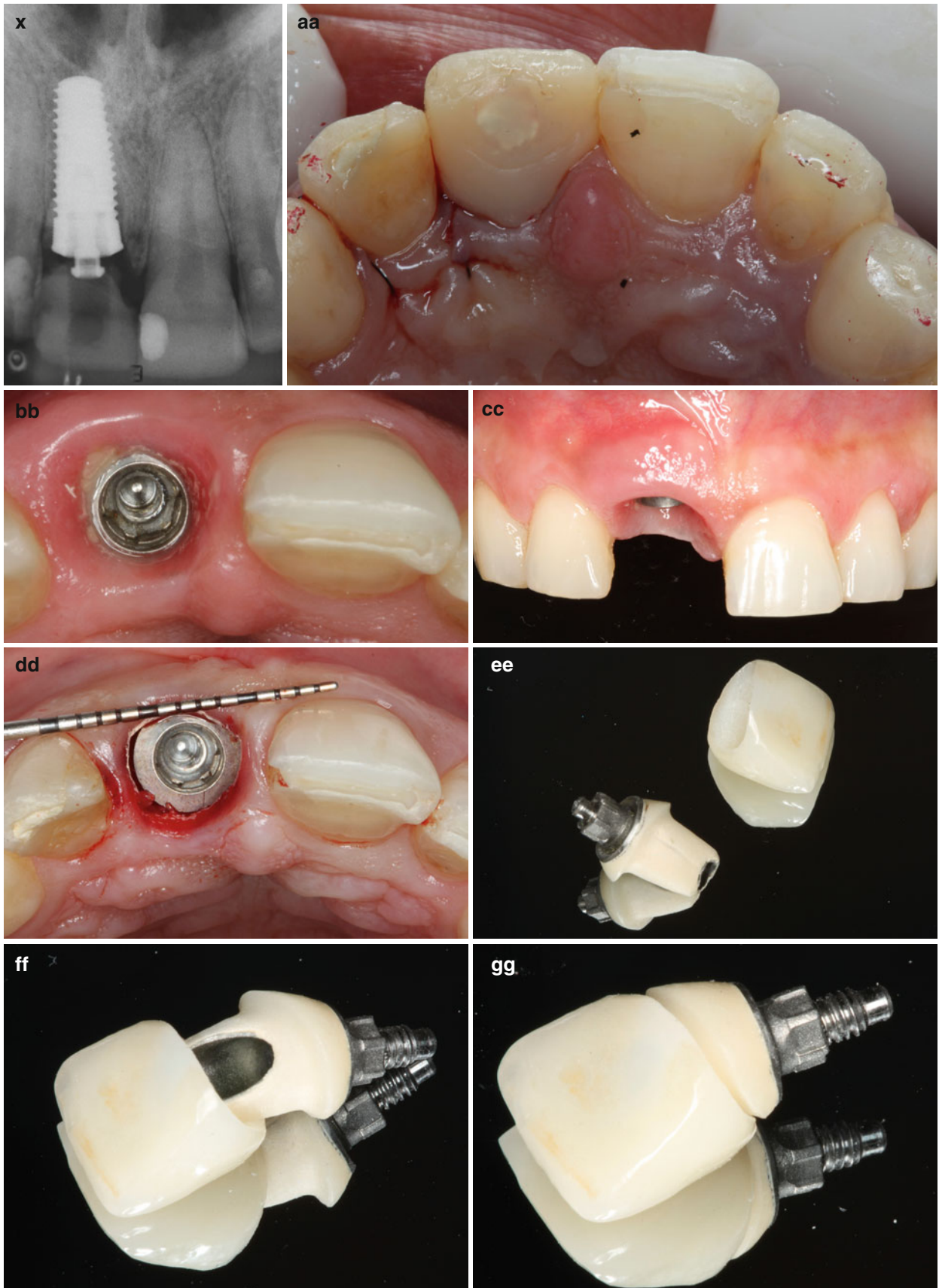
buccal bone crest (l). Checking the dissected site (n). Soft tissue graft being positioned (o). Bone substitute being placed (p). Grafts accommodation (q–s). Soft tissue graft sutured (t). Sequence of provisional implant restoration (u, v). Tooth crown adapted as provisional restoration (w). Case XXI–21 (x–oo). Radiograph after implant installation (x). Tooth crown adapted as provisional restoration – occlusal view (aa). Six-month follow-up – occlusal view (cc). Six-month follow-up (bb). Amount of alveolar ridge thickness preserved (dd). Prosthetic component and porcelain crown prepared (ee–gg). Prosthetic component screwed to the implant (hh, ii). Definitive porcelain crown (jj). Definitive restoration being cemented (kk). Radiograph exam with definitive restoration installed (ll). Final result (mm–oo)



**Fig. 7.21** (continued)



**Fig. 7.21** (continued)



**Fig. 7.21** (continued)



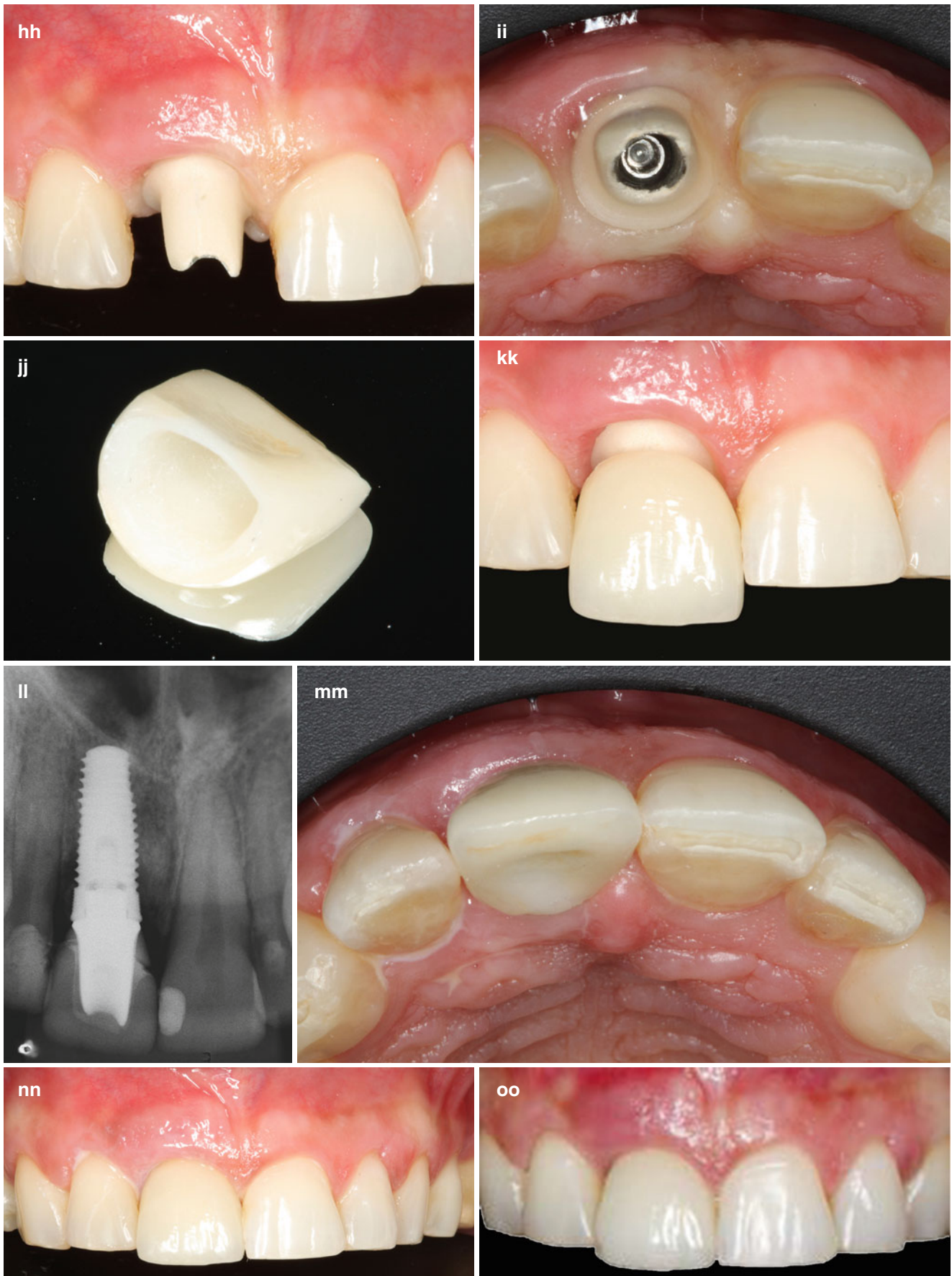


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**Fig. 7.22** Case XXII–22. Treatment planning: implant placement, soft tissue augmentation with subepithelial connective tissue graft, provisional restoration, and porcelain cemented single-crown restoration 6 months after surgical procedures. Baseline (**a–e**). Horizontal incision over the alveolar ridge connecting the intrasulcular incisions performed at teeth 11 and 22 (**f**). Full-thickness flap raised (**g**). Delimitation of the tooth-implant-tooth distance (**h**). Alveolar ridge after drilling the recipient site to receive the implant (**i**). Assessment of the osseous deformity formed due to ridge resorption following tooth 21 extraction (**j**). Implant being installed (**k**). Graft being harvested (**l**). Graft being positioned between the

alveolar ridge and the internal side of the full-thickness flap (**m**). Graft in position (**n**). Graft in position – occlusal view (**o**). Flap sutured (**p**). Provisional restoration fixed to adjacent teeth (**q**). One-week follow-up (**r–t**). One-month follow-up (**u, v**). Prosthetic components (**w–bb**). Provisional cemented crown installed (**cc**). Radiograph of the provisional crown installed (**dd**). Six months after implant installation – frontal view (**ee–hh**). Assessment of the alveolar ridge (**ii**). Peri-implant sulcular epithelium (**jj**). Vascularization and anatomy of the peri-implant mucosa (**kk, ll**). Definitive porcelain crown being installed (**mm**). Definitive porcelain crown installed (**nn, oo**). Final radiograph (**pp**)

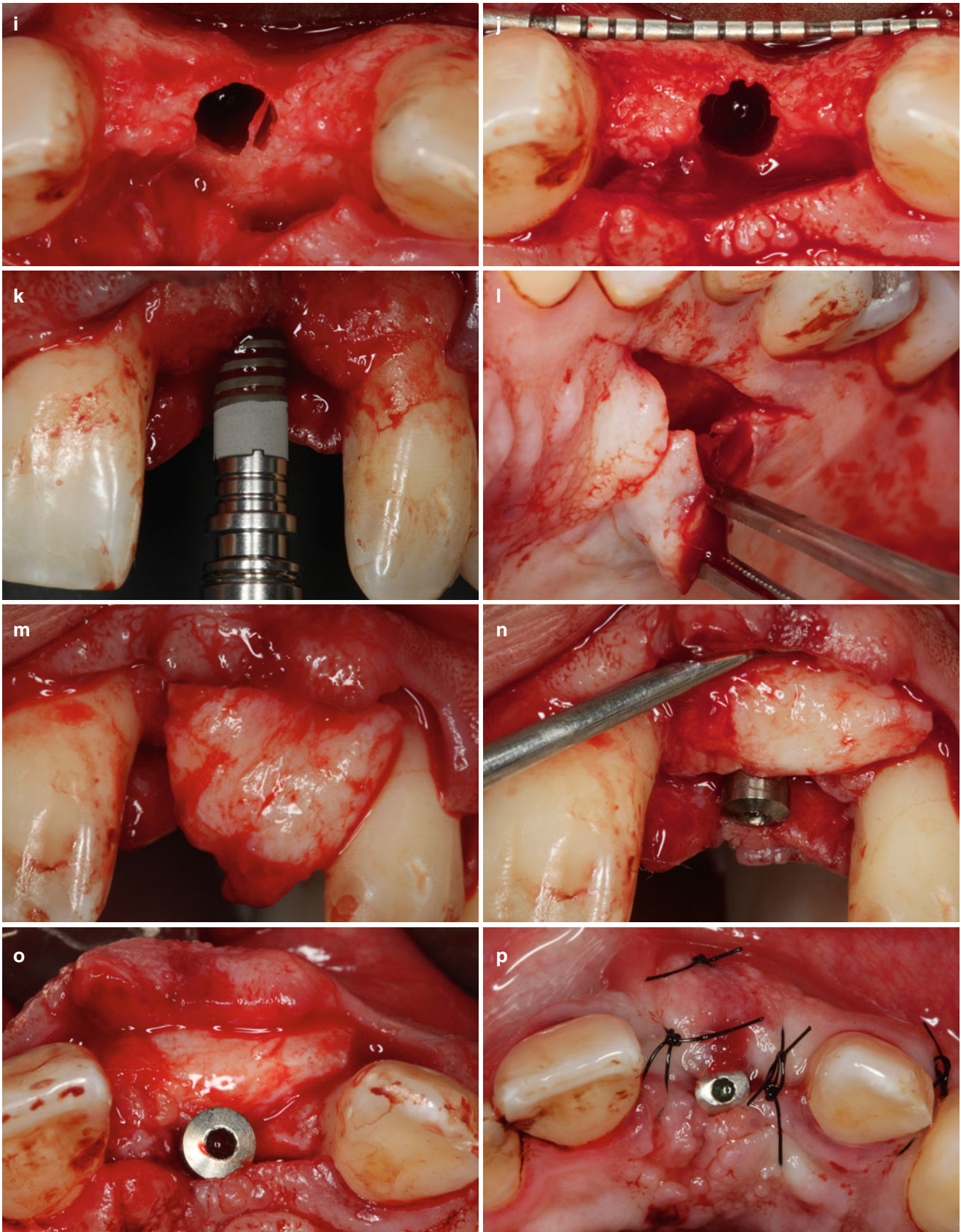
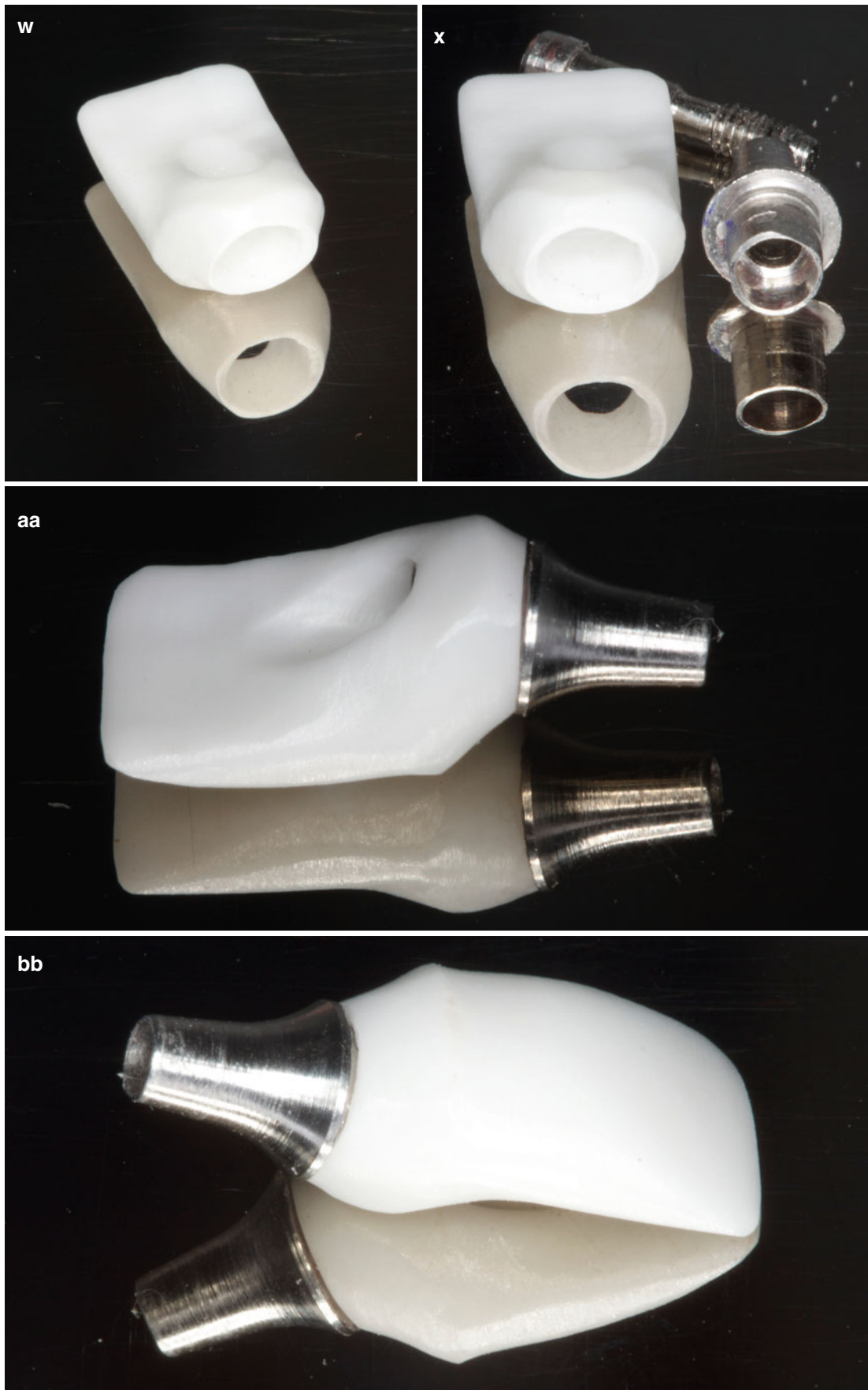


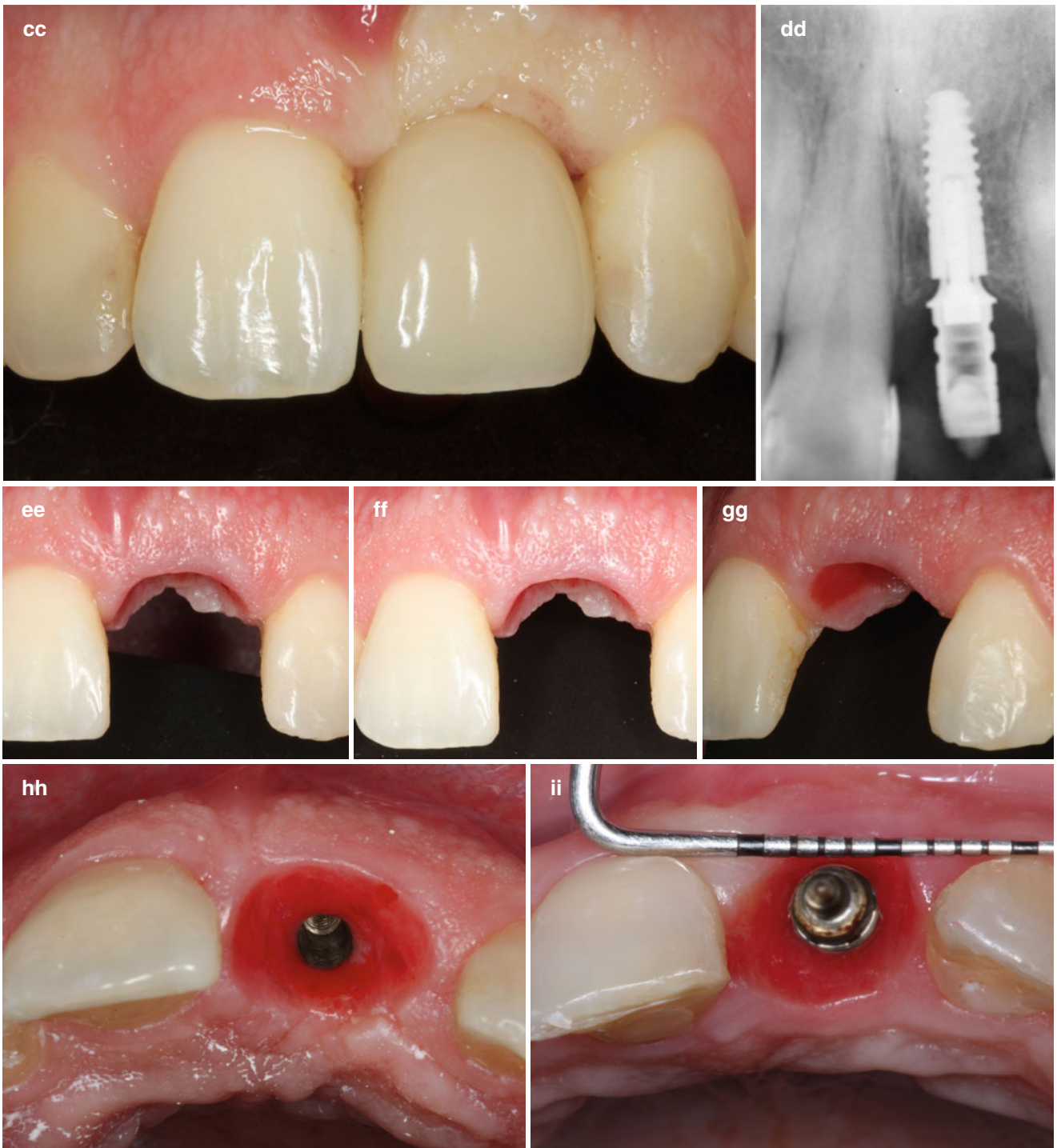
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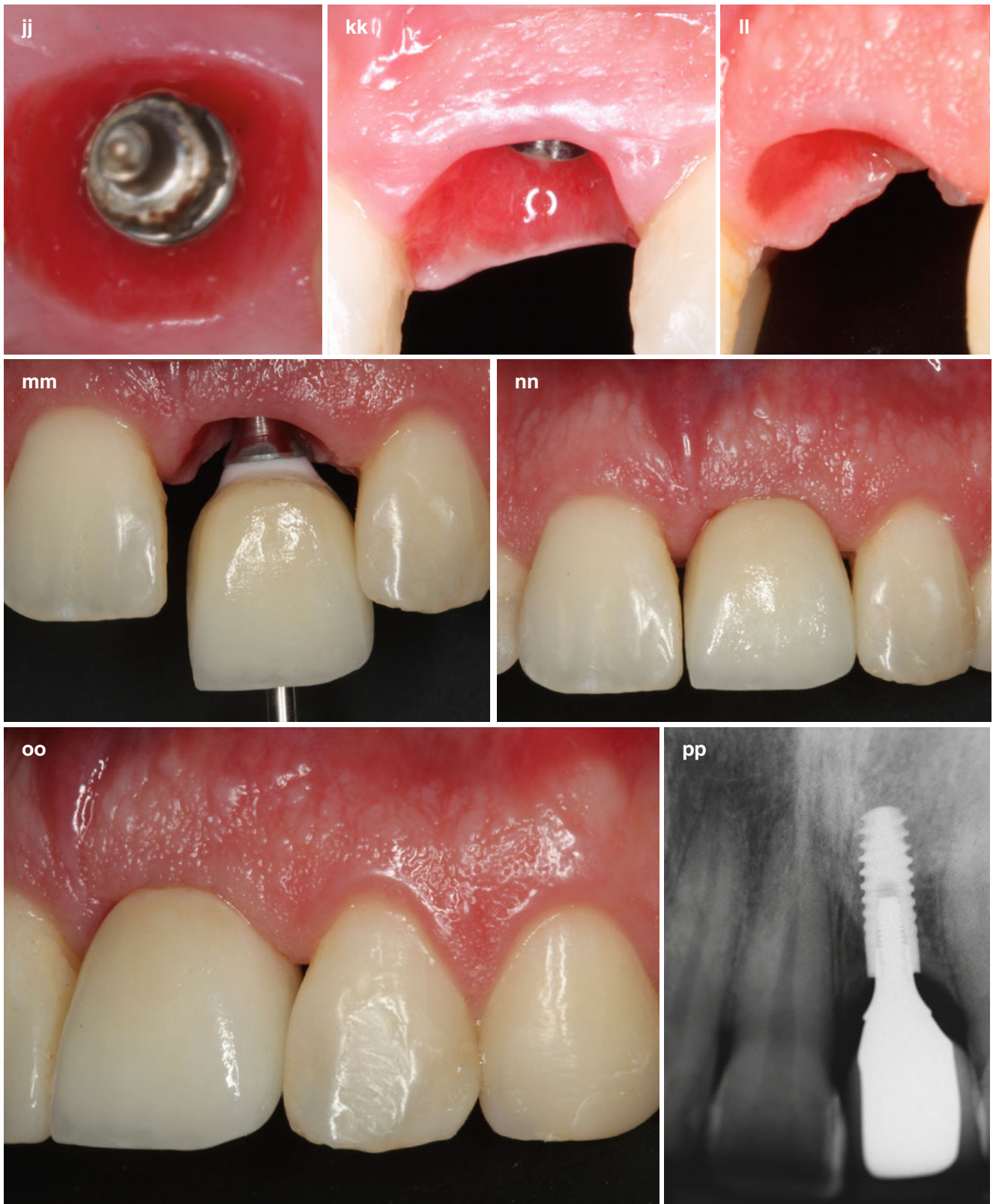
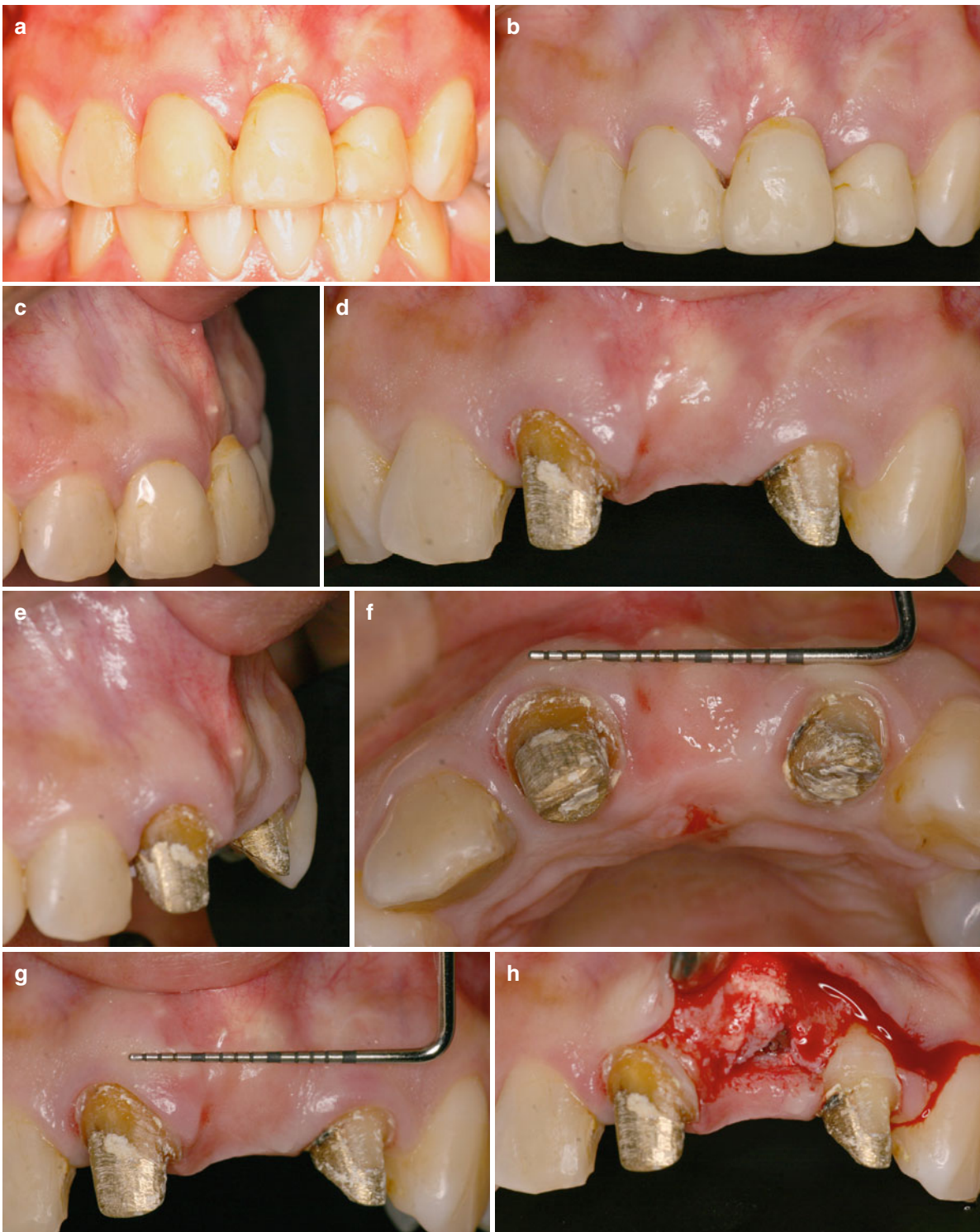


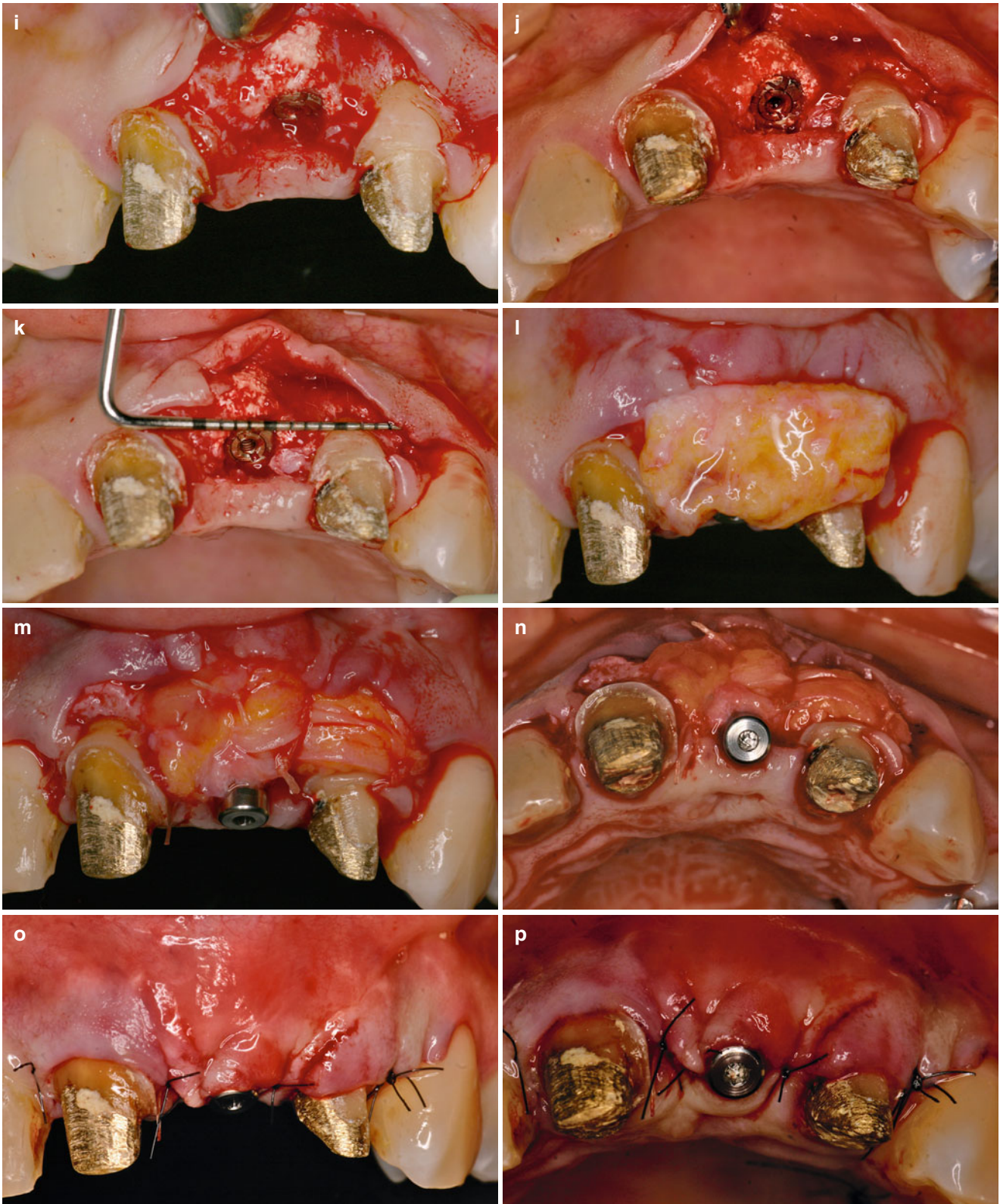
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**Fig. 7.23** Case XXIII – 23 (a–p). Treatment planning: implant reopening, soft tissue augmentation with subepithelial connective, and porcelain single-crown restorations. Baseline (a–c). Clinical aspect of the soft tissues following provisional restoration removal (d). Clinical aspect of the soft tissues following provisional restoration removal (e, f). Assessment of the area/perimplant site to be grafted (g). Full-thickness flap raised (h–j). Trans-surgical assessment of the area to be grafted (k). Graft being positioned (l). Graft sutured to the recipient site (m, n). Flap repositioned and sutured (o, p). Assessment of the soft tissue contour of

the alveolar ridge (q–s). Provisional restorations replaced (t, u). Clinical condition of the soft tissues at the day of new provisional restoration cementation (v, w). Interproximal soft tissue tooth/implant (x). New provisional crowns cemented (aa, bb). Clinical condition of the soft tissues at the day of definitive restorations cementation (cc–ee). Definitive porcelain crowns (ff, gg). Definitive crowns cemented (hh, ii, jj). Adequate lip-crown relationship (kk). Radiograph – just before crown’s cementation (ll). Final result (mm–oo)

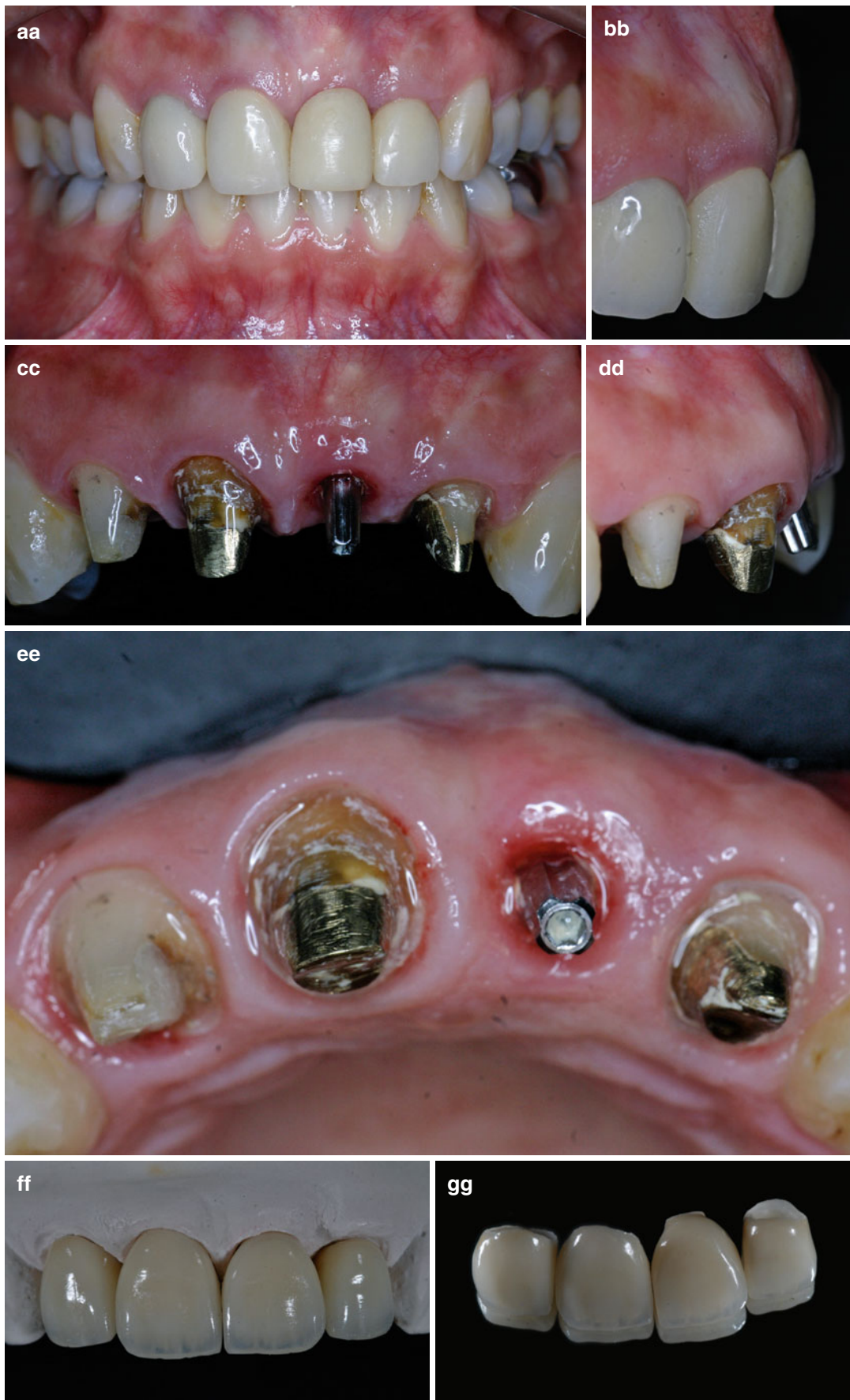




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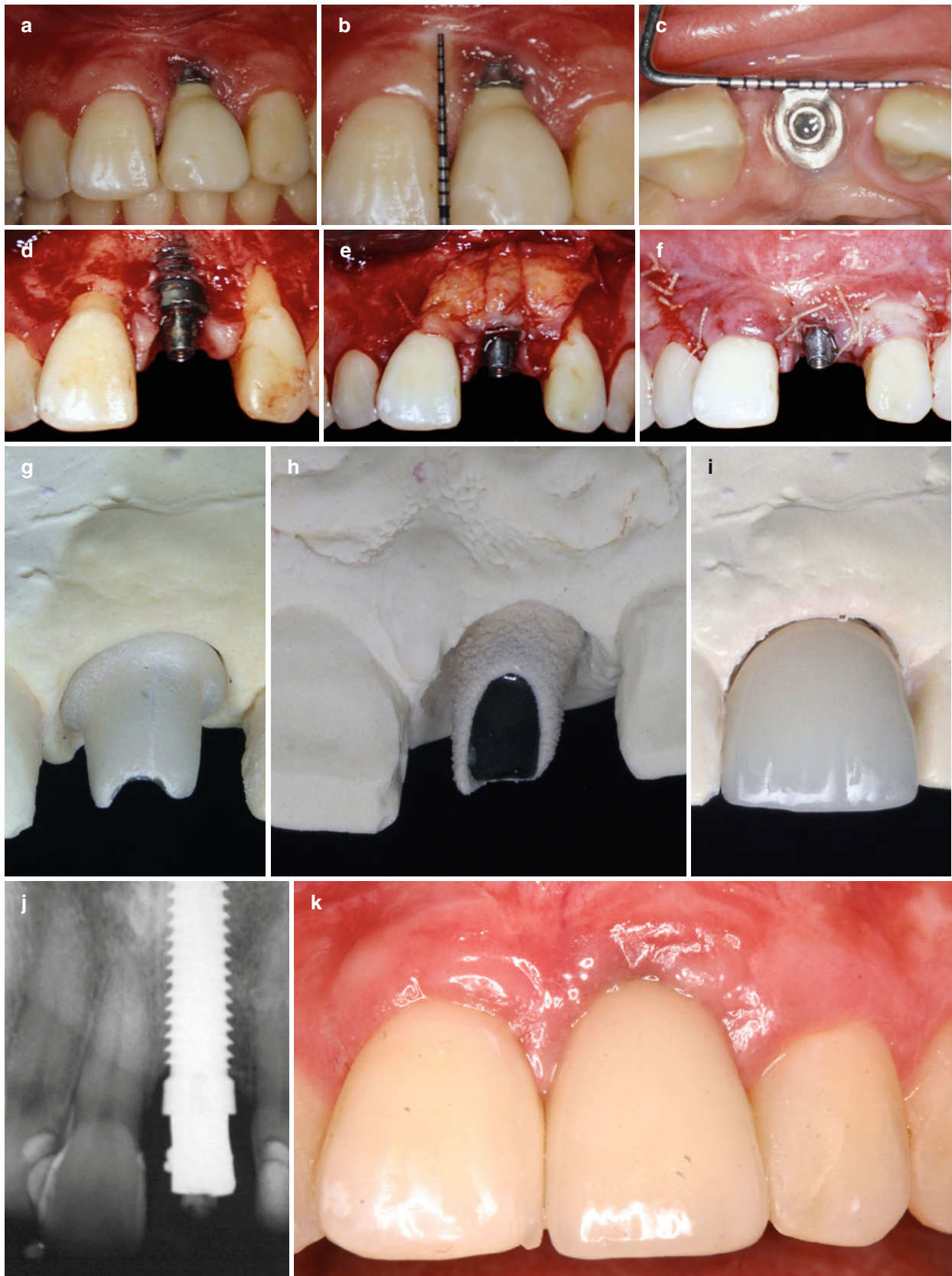
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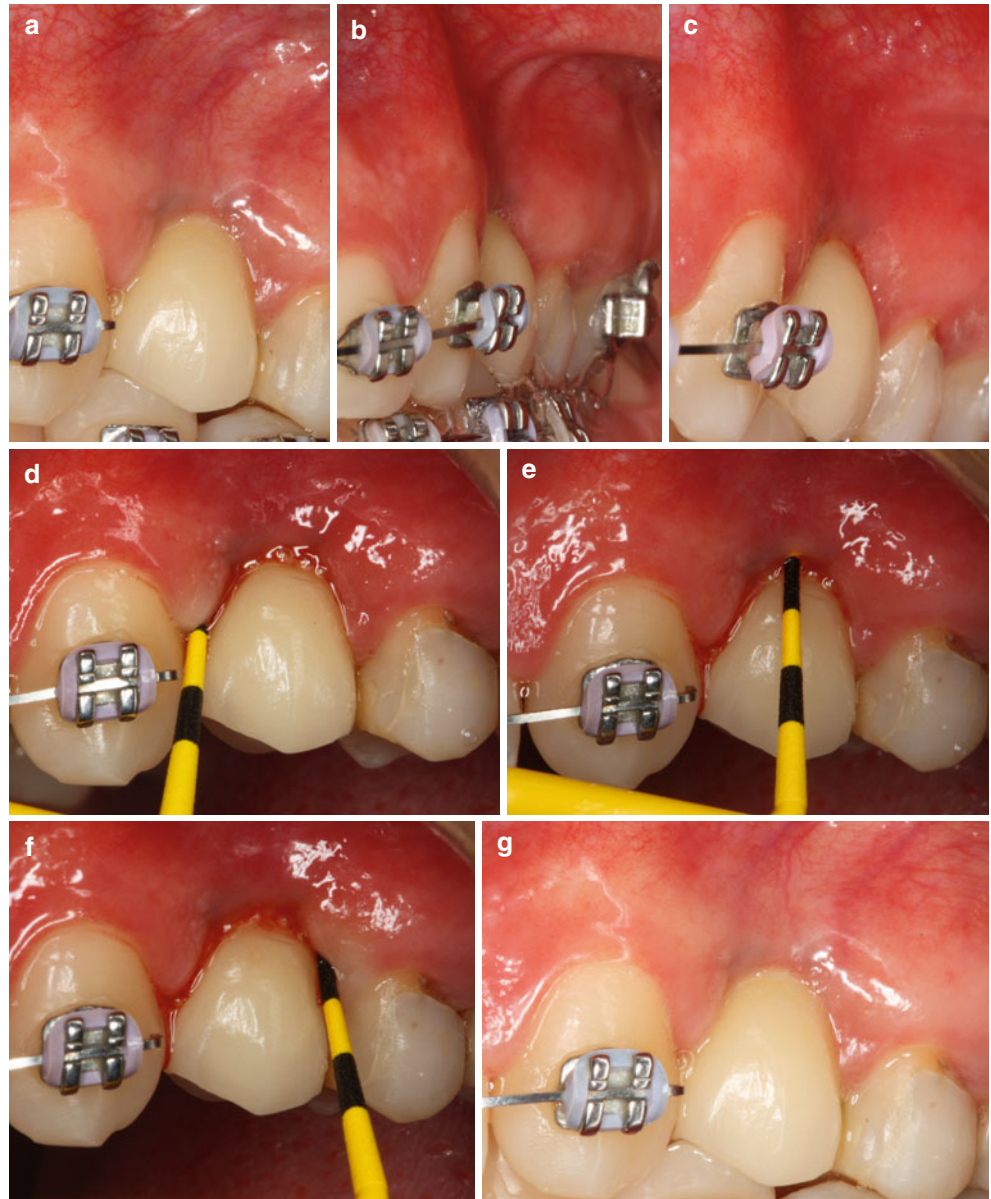
**Fig. 7.24** Case XXIV – 24 (a–n). Treatment planning: implant surface decontamination, implant thread coverage (subepithelial connective tissue graft), and new porcelain cemented single-crown restoration 6 months after the surgical procedure. Baseline (a). Assessment of the vertical peri-implant mucosa needed to recover the implant (b). Assessment of the amount of horizontal peri-implant mucosa needed to

recover the implant (c). Full-thickness flap raised (d). Graft sutured over the implant after thread decontamination (e). Flap coronally advanced covering completely the graft (f). New implant components (g–i). Radiography showing the peri-implant conditions before new crown installation (j). New crown installed 6 months after surgery (k). Assessment of probing depths 6 months after surgery (l–n).



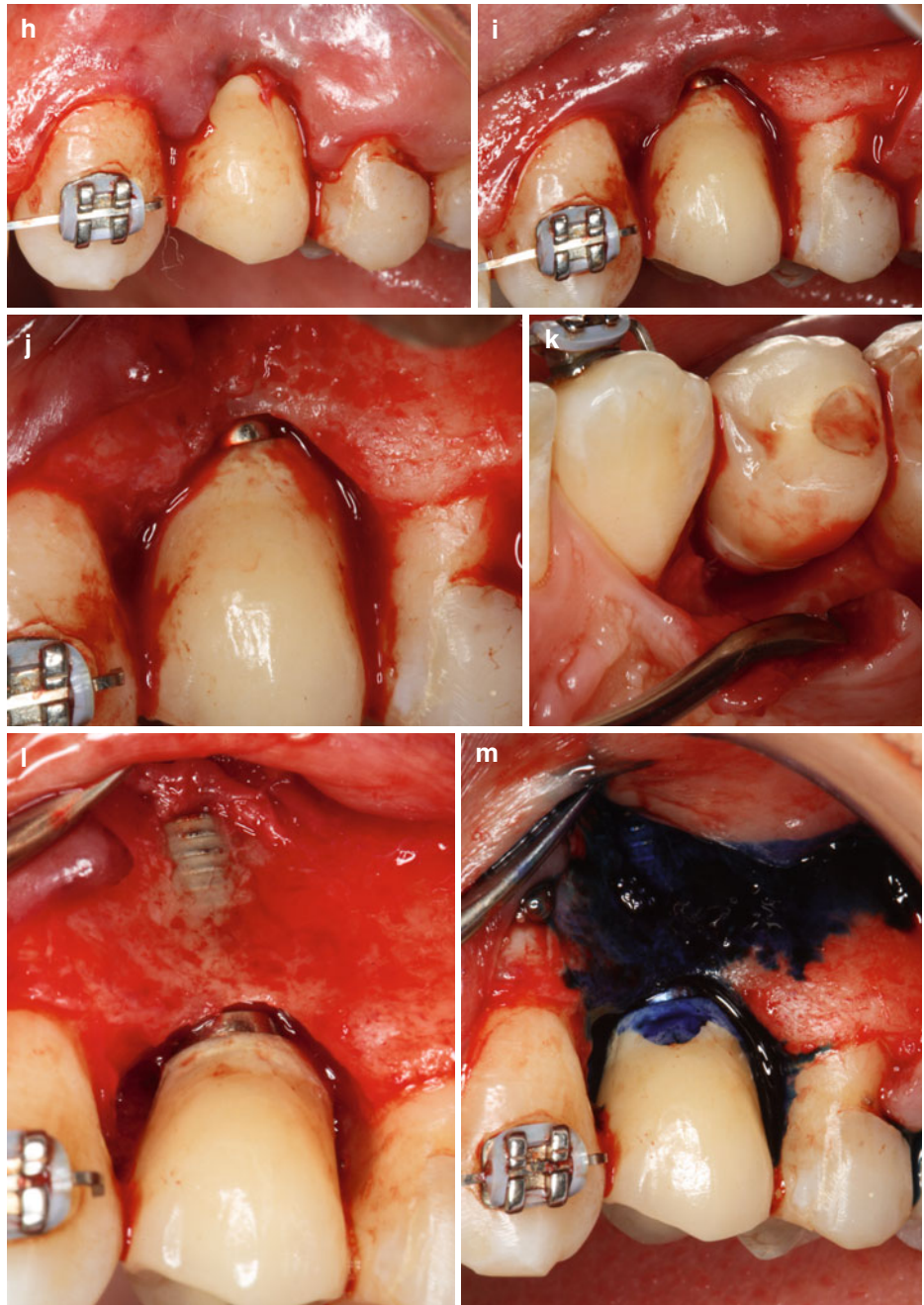
**Fig. 7.24** (continued)

**Fig. 7.25** Case XXV – 25 (a–m). Treatment planning: treatment of mucositis, laser decontamination, and soft and hard tissue augmentation with subepithelial connective tissue graft and synthetic bone graft material. Baseline (a–c). Probing depths at baseline – detection of mucositis (d–f). Baseline – day of surgery (g). Intrасulcular incisions performed (h). Full-thickness flap being raised (i). Flap raised (j, k). Identification of an osseous fenestration over the implant surface (l). Pigment applied before laser application (m). Laser application (n, o). Bone substitute placed (p, q). Soft tissue being harvested (r). Resorbable membrane being placed over the bone substitute (s). Soft tissue graft sutured at the recipient site (t). Flap repositioned and sutured (u). 45-day follow-up (v, w). Three-month follow-up (x, aa)

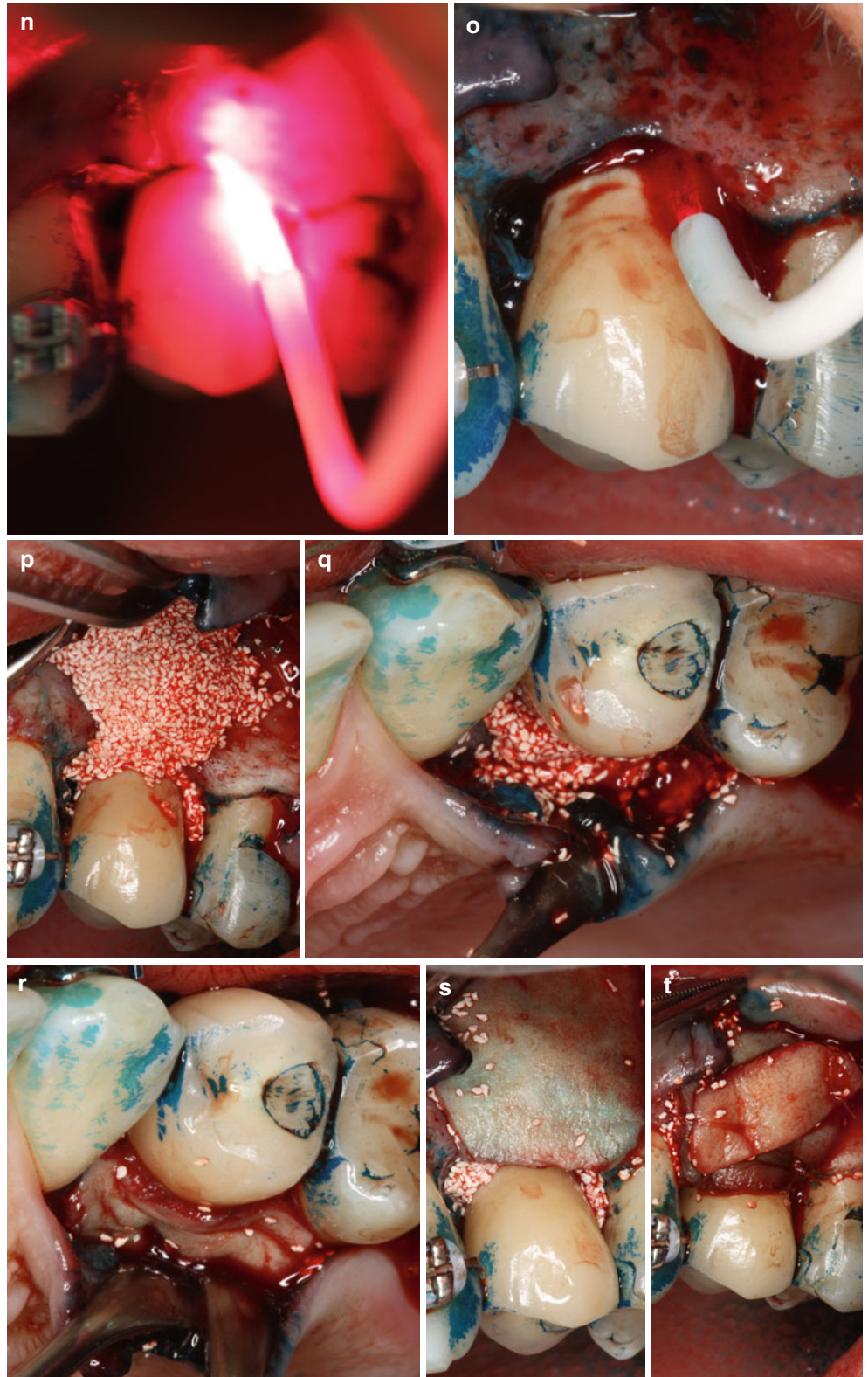




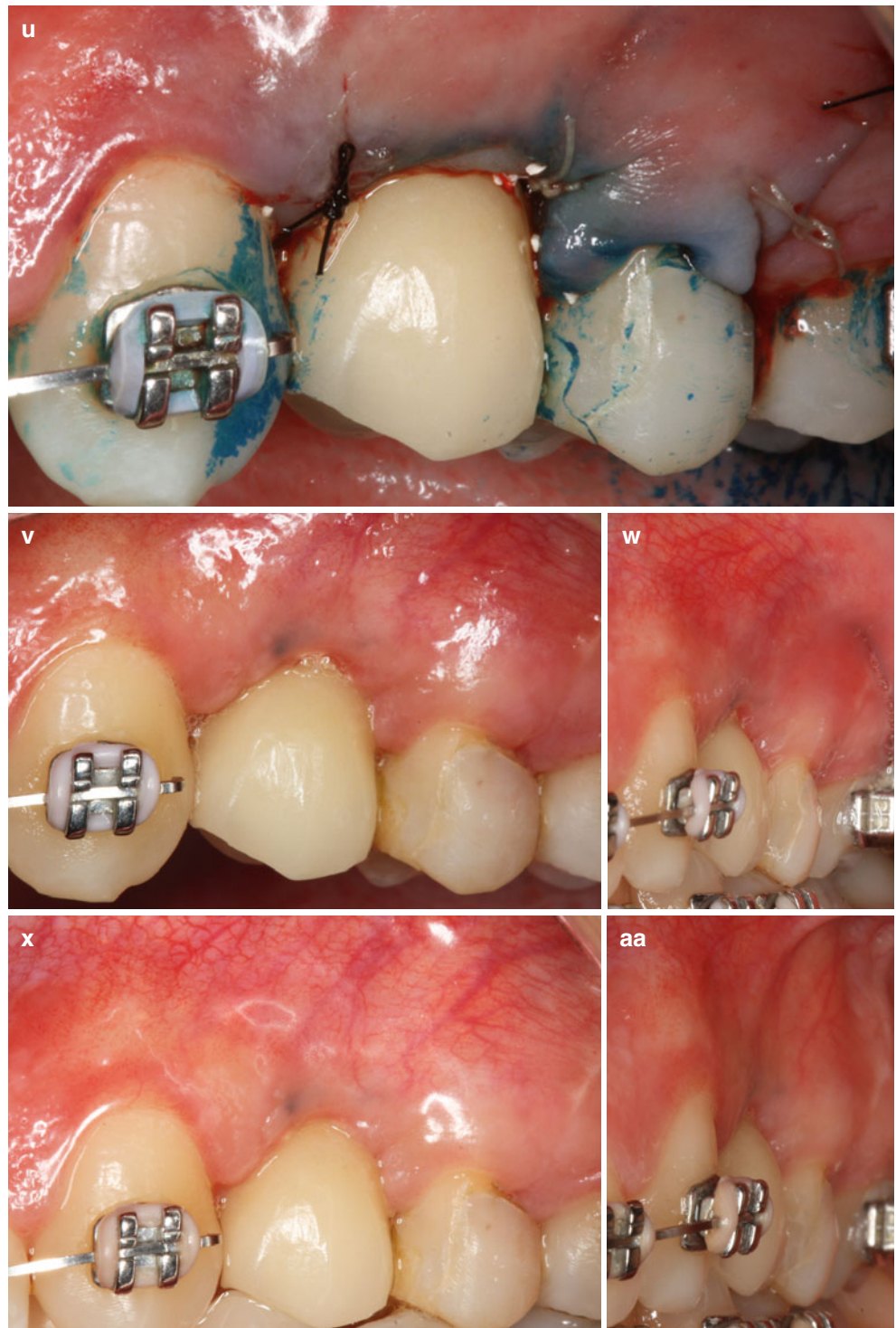
**Fig. 7.25** (continued)



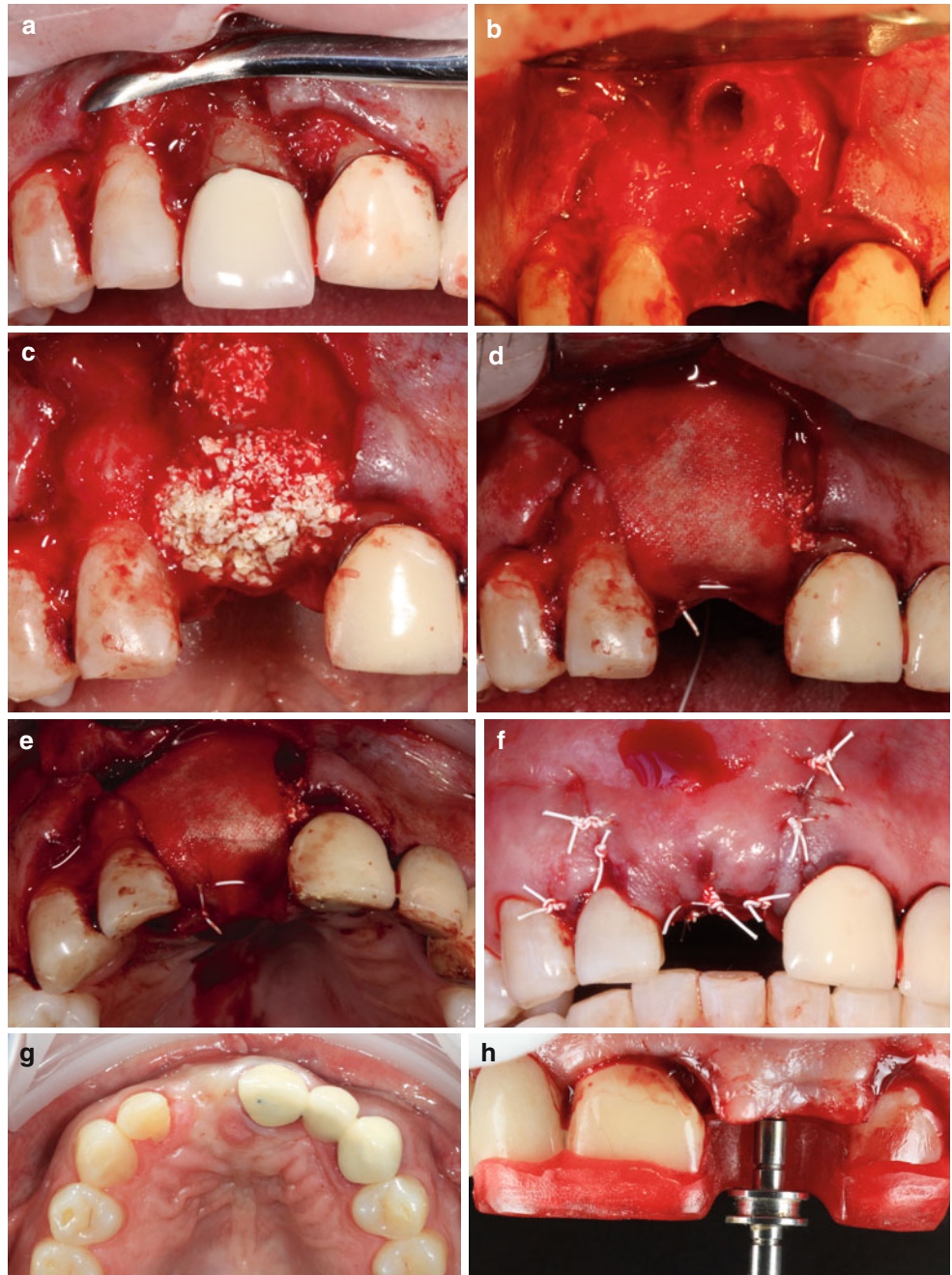
**Fig. 7.25** (continued)



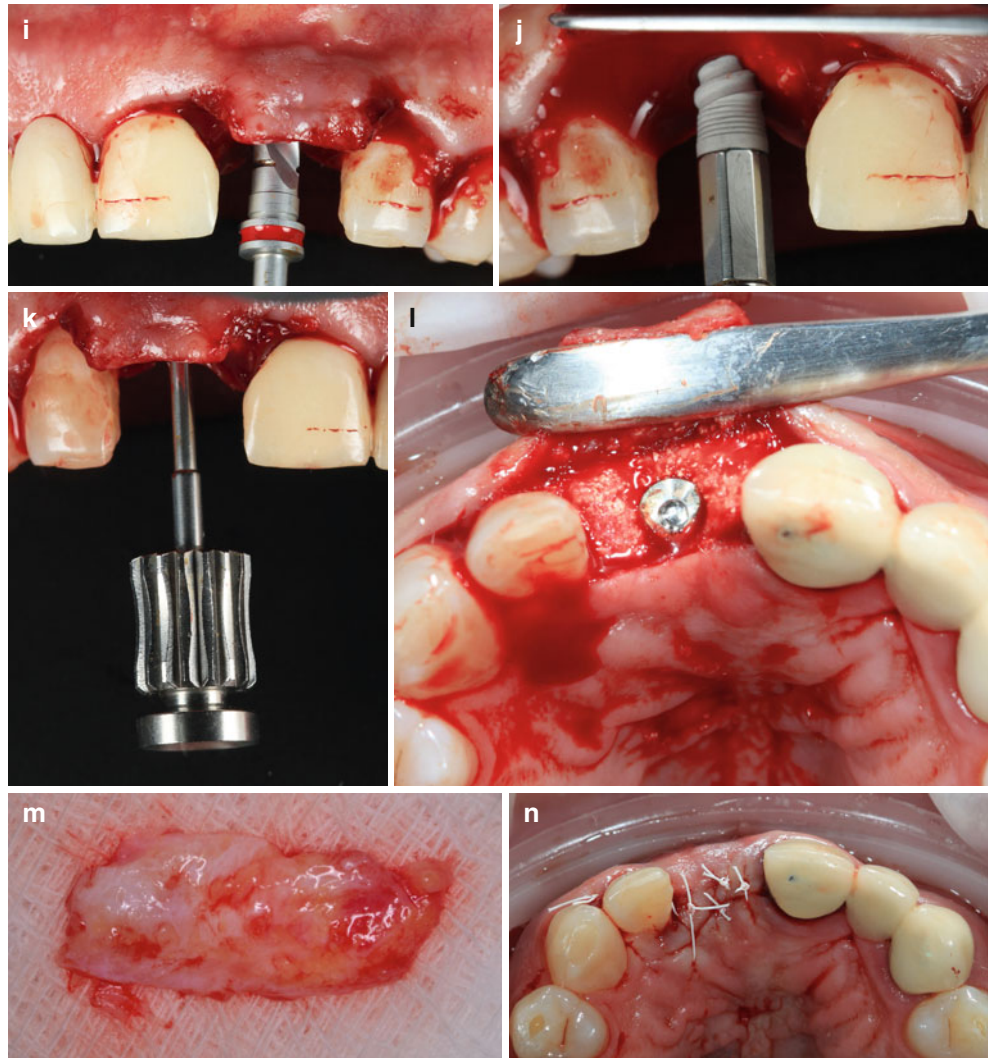
**Fig. 7.25** (continued)



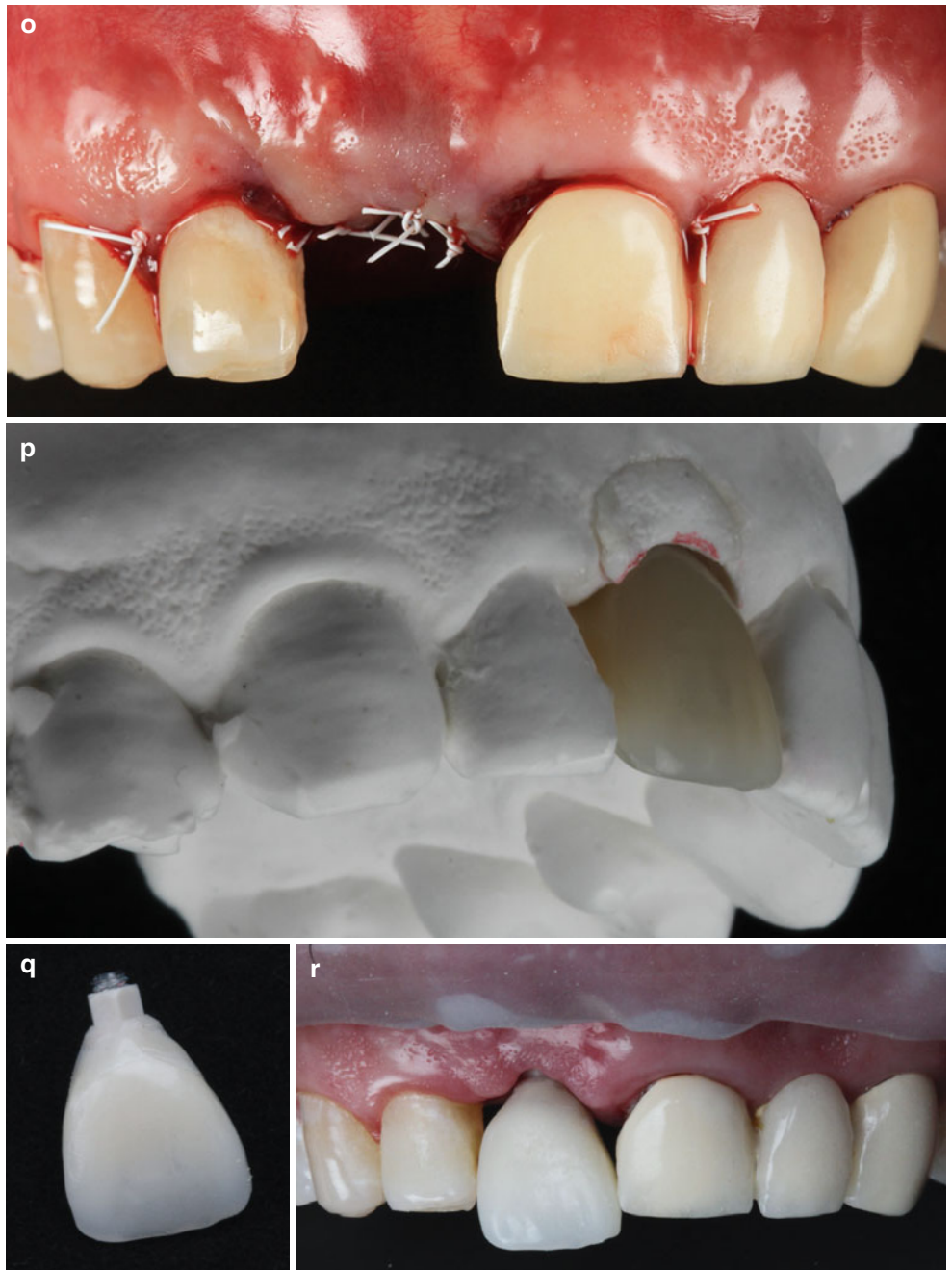
**Fig. 7.26** Case XXVI – 26 (a–n). Treatment planning: extraction of tooth 11 due to root fracture, guided osseous regeneration (bone substitute + absorbable membrane), implant placement, soft tissue augmentation with subepithelial connective tissue graft, and provisional restoration after osseointegration. Flap raised exposing a root fracture of tooth 11 (a). Condition of the alveolar ridge after tooth extraction (b). Bone substitute placed on the alveolar ridge (c). Absorbable membrane placed over the graft (d). Membrane sutured to the recipient site (e). Flap coronally advanced and sutured (f). Six-month follow-up – day of implant installation (g). Implant site preparation (h). Implant being placed (i, j). Placement of cover screw (k). Cover screw placed (l). Soft tissue graft harvested (m). Flap repositioned and sutured after soft tissue graft placement (n). Flap coronally positioned and sutured after soft tissue graft placement (o). Provisional crown (p, q). Provisional crown installed 4 months after implant placement (r). Provisional crown being installed 4 months after implant placement (s). Probing depths after crown installation (t, u). Provisional crown installed 4 months after implant placement (v). Condition of the peri-implant mucosa 6 months after implant placement (w). Definitive crown cemented (x)



**Fig. 7.26** (continued)

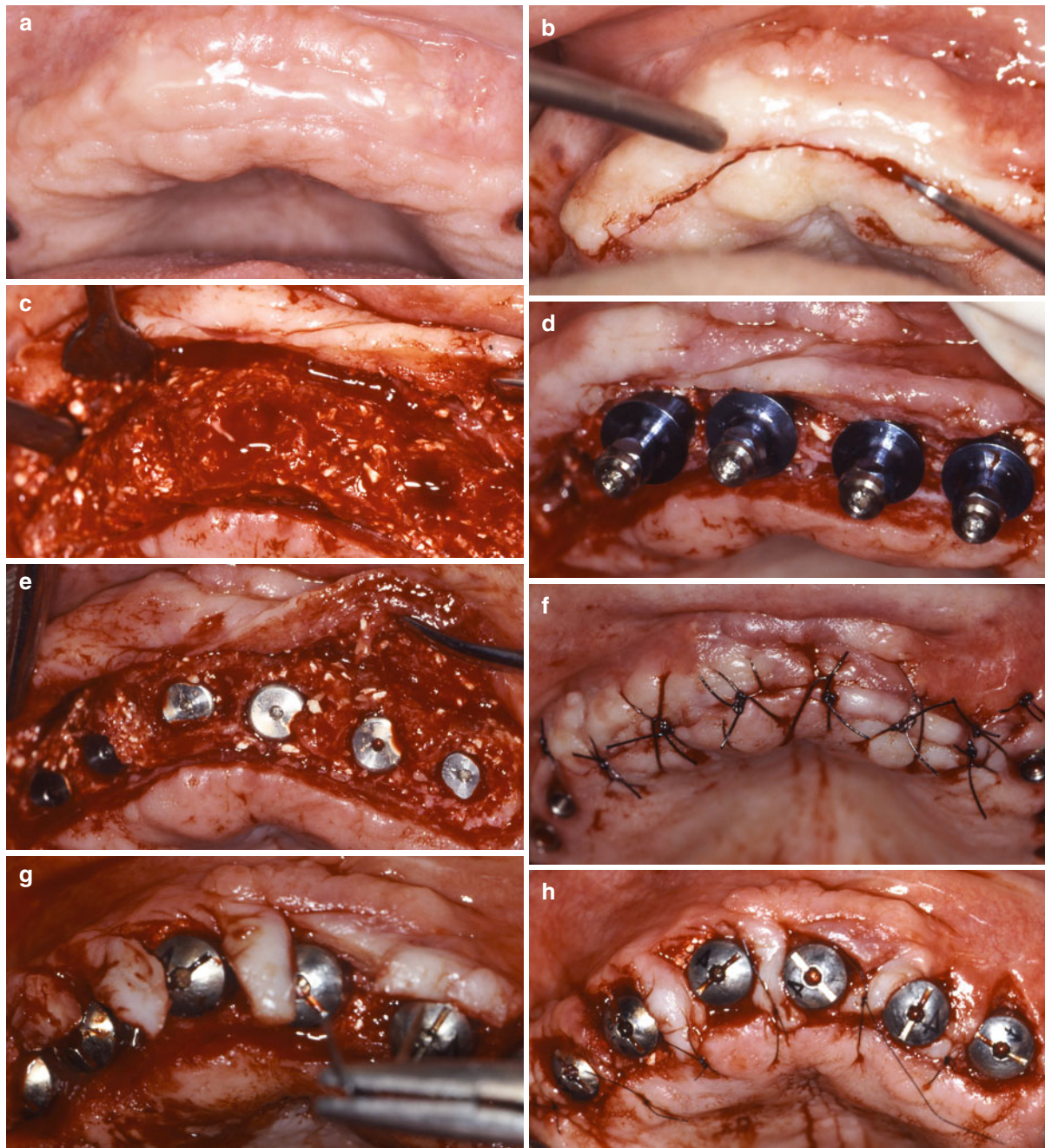


**Fig. 7.26** (continued)



**Fig. 7.26** (continued)



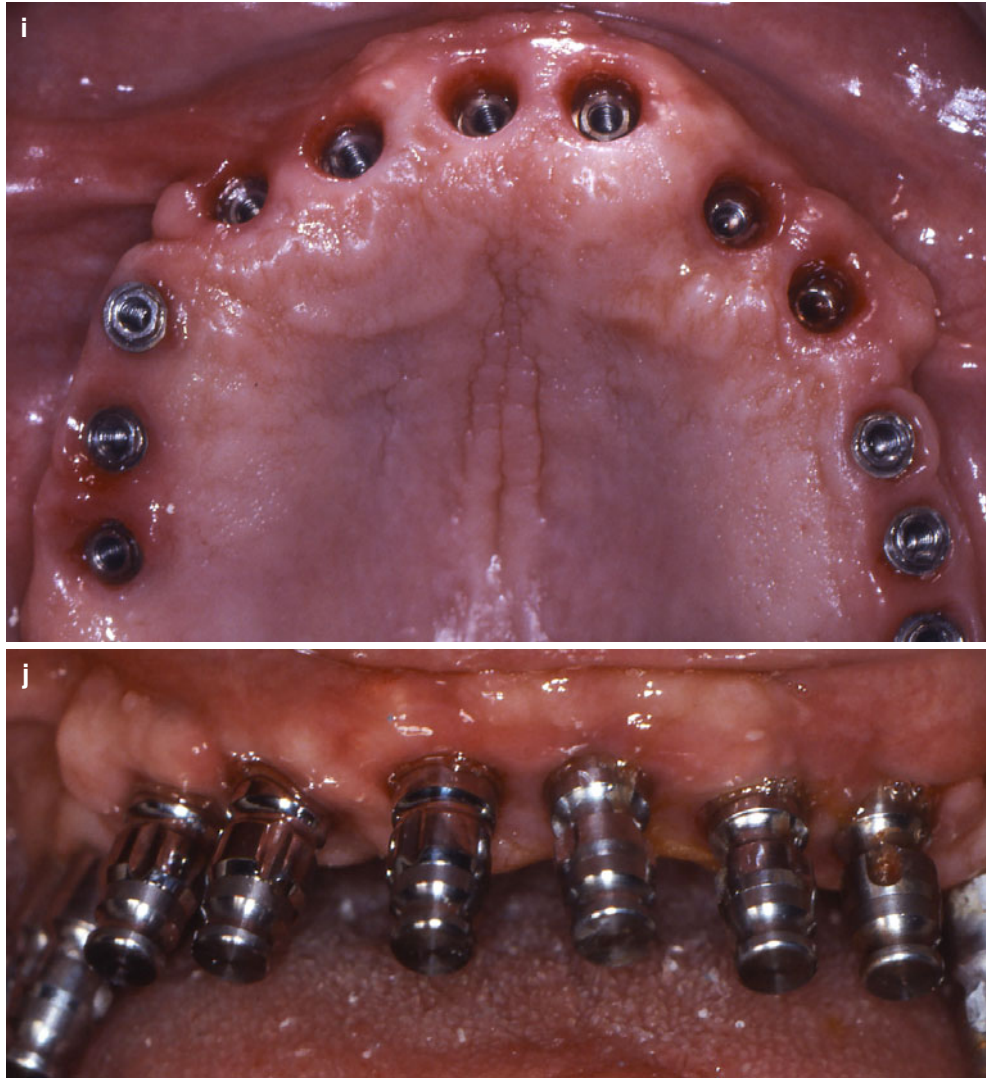


**Fig. 7.27** Case XXVII – 27 (a–j). *Treatment planning*: placement of multiple implants at a previously grafted site (allogeneous bone graft+absorbable membrane), the use of mini-pedicle flaps during reopening, soft tissue augmentation with free gingival grafts, and cemented porcelain crown bridges. Baseline (a). Crestal incision (b). Full-thickness flap elevated showing the results achieved with guided osseous regeneration (c). Implants being installed (d). Implants installed (e). Flap repositioned and sutured (f). Reopening 6 months later – mini-pedicle flaps designed to improved interproximal tissue around implants (g). Mini-pedicle flap rotated and sutured at the interproximal sites of

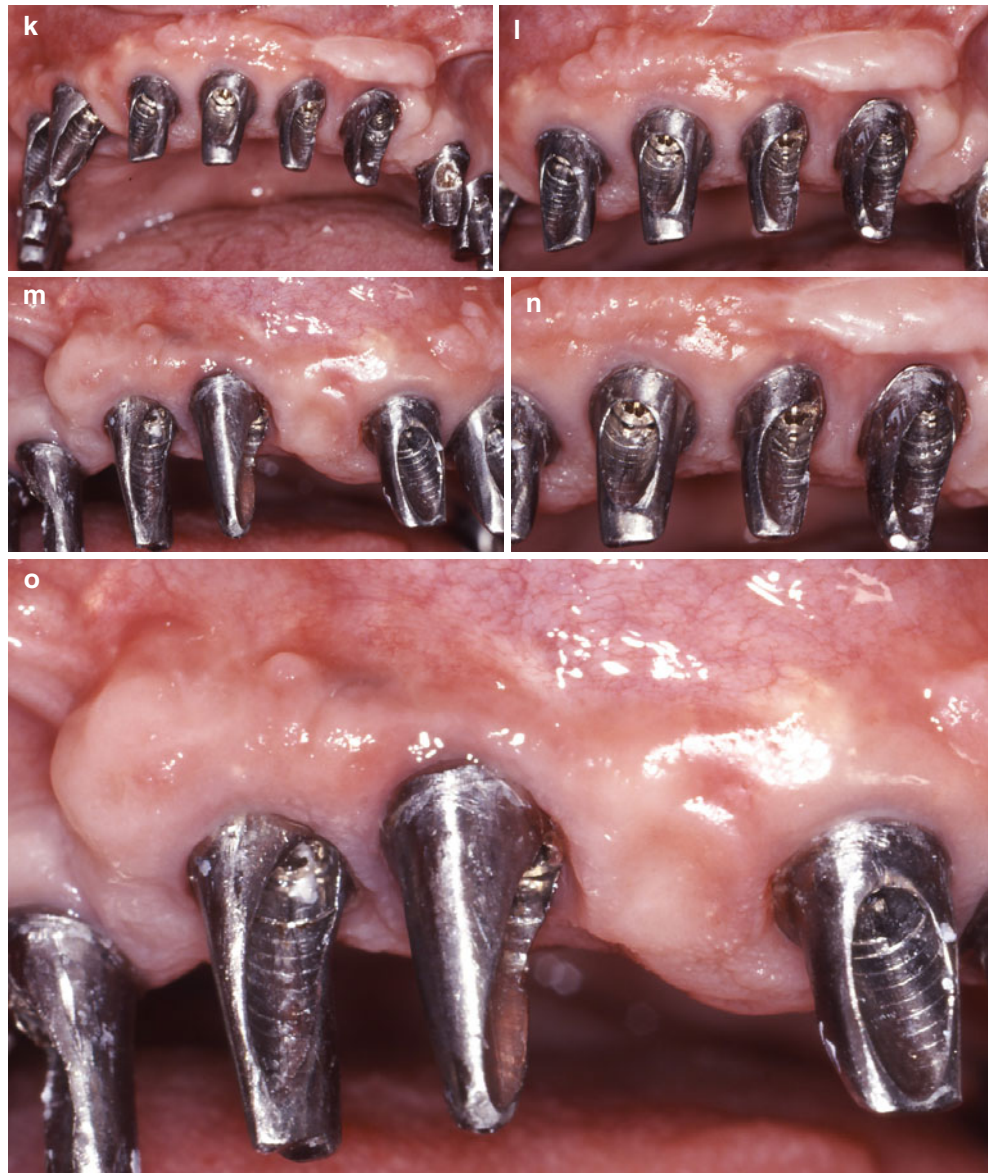
the implants (h). Three-month follow-up (i). Parallelism of all implants – between 3 and 12 months after reopening of the anterior implants, free gingival grafts were performed to improve the width of keratinized tissue before the installation of the definitive restorations (j). Clinical aspect of soft tissue grafted sites (k–o). Titanium structure of the prosthesis (p). Final fixed prosthesis (q, r). Ten-year follow-up – definitive restorations (s, t). Twelve-year follow-up – definitive restorations – the lower arch received similar treatment 2 years earlier to the upper arch (u). Ten-year follow-up – definitive restorations (v–ce)



**Fig. 7.27** (continued)



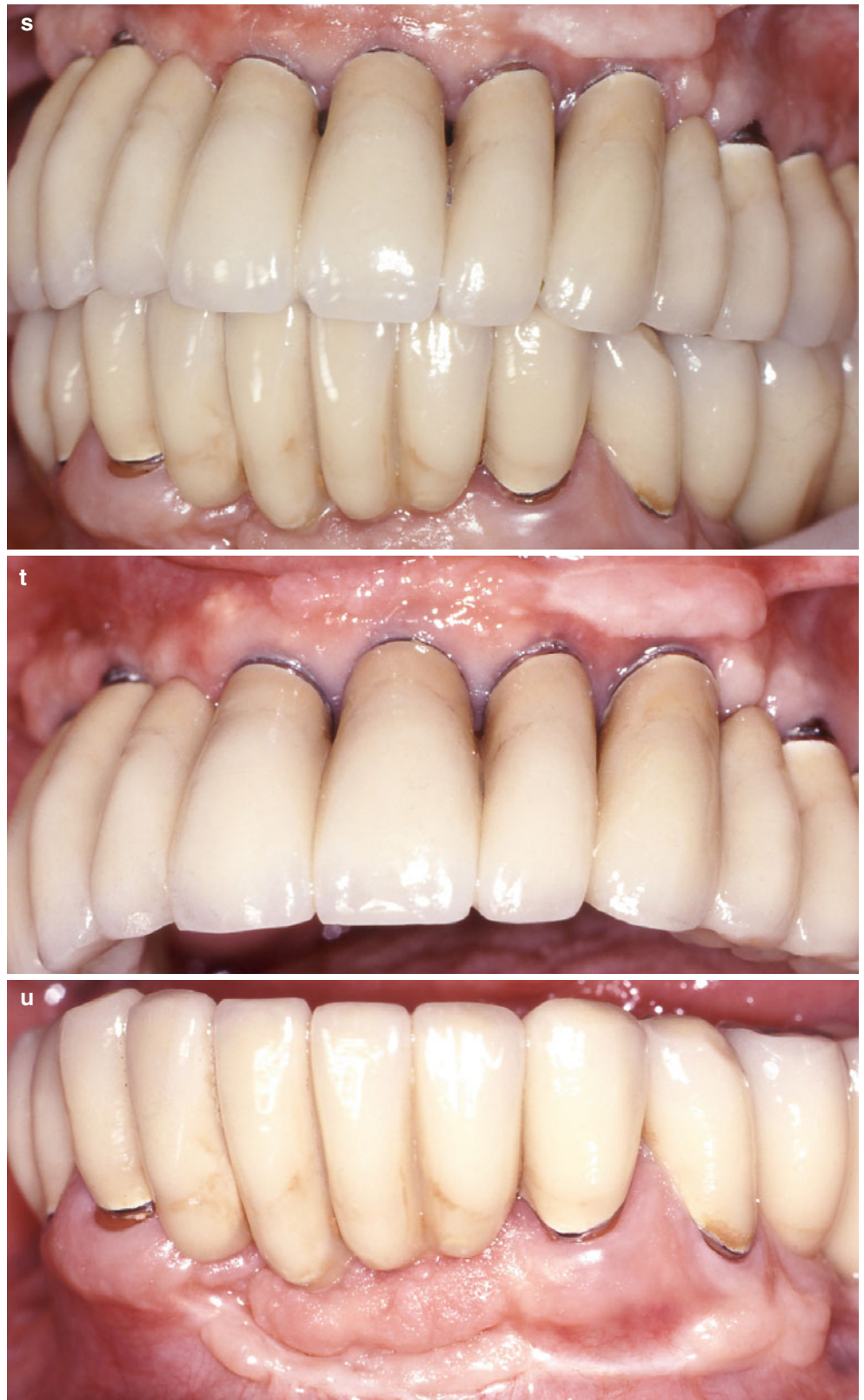
**Fig. 7.27** (continued)



**Fig. 7.27** (continued)



**Fig. 7.27** (continued)



**Fig. 7.27** (continued)

