Fragment fixation is performed with adaptation plates 1.5, 2.0, or corresponding Matrix plates. L-plates on the nasal buttresses are typically used (**Fig 7.3.3-3a–b**). Before fixation, the plates must be precisely bent and passively adapted to the bone surface to prevent secondary movements through attraction of a fragment to the plate. Compression osteosynthesis is not indicated to stabilize small fragments in corrective bone surgery.

For stabilization of segmental osteotomies it is recommendable not to rely solely on internal fixation devices such as plates and screws because of the long lever arm between the insertion point of the plate at the upper border of the fragment and the point of load at the occlusal plane, but to additionally use dental arch fixation with orthodontic devices. The use of a splint gives additional postoperative stability.

Lateral maxillary subapical osteotomies

A lateral maxillary block typically includes premolars and molars. It is used for frontal open bite correction through bilateral impaction of the lateral blocks. Patient preparation is the same as for anterior segment surgery.

The soft-tissue access can be performed either by a horizontal vestibulary incision from region 3 to 8, or, with regard to a safer blood supply, by vertical vestibulary incisions not directly above the planned osteotomy line in region 4 and 7/8 and subsequent tunnelling under the mucosa. Again, the vertical cuts should not extend into the interdental papillae to prevent gingival recessions after healing. Subperiosteal dissection then provides access to the alveolar process and the anterior-lateral antral wall. The planned osteotomy lines are marked with a small round burr (**Fig 7.3.3-4a**).

The osteotomy is carried out with burrs, piezoelectric devices, microsaw, and/or osteotomes. The horizontal ostectomy is performed at a safe distance, typically 5 mm or more from the apices of the teeth. The width of the ostectomized bone strip must correspond to the amount of the planned impaction (**Fig 7.3.3-4b–c**).

The anterior vertical osteotomy divides the alveolar ridge between two teeth, mostly canine and first premolar. The posterior osteotomy can either split the pterygomaxillary junction or run through the alveolar ridge, sometimes after removal of the wisdom tooth. The palatal osteotomy finally is performed transantrally with a burr through the previously created gap in the antral wall (**Fig 7.3.3-4d**). Care must be taken not to damage the palatal soft-tissue cover and to preserve the palatal vessels. Otherwise, excessive bleeding can be a problem. However, there seems to be no evidence for blood supply problems if the descending palatine vessels are transsected.

Even after full mobilization of the segment, impaction can be a difficult procedure. It is achieved either manually or with careful use of a blunt osteotome. Finally, the occlusal splint is inserted and the segment position controlled. Mandibulomaxillary fixation is done with wire ligatures.

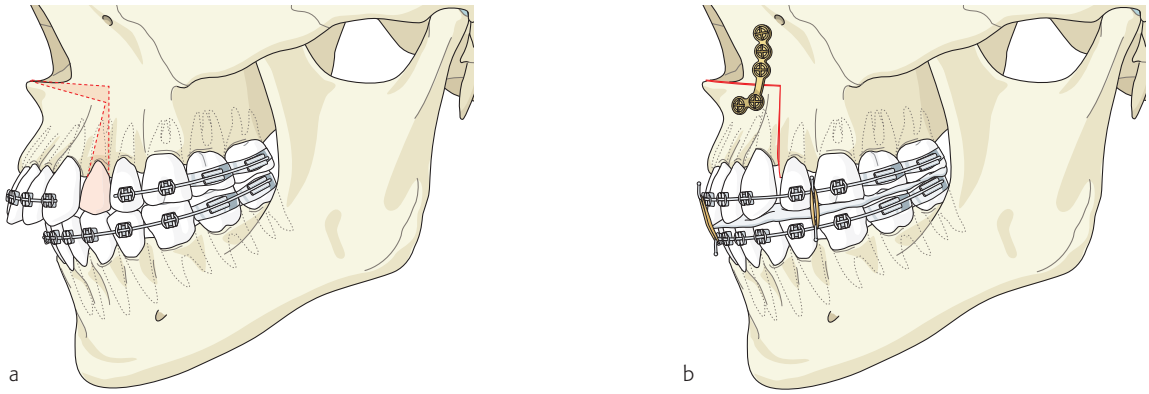

Fig 7.3.3-3a–b Anterior maxillary osteotomy according to Schuchardt/Köle.
a Schematically drawn is the bony part which has to be removed together with the first premolar.
b The frontal segment in its new position, stabilized with an L-plate.

Fragment fixation is performed with adaptation plates 1.5 or Matrix plates (**Fig 7.3.3-4e**). Again, the plates must be perfectly adapted to the bone surface to avoid positional changes while tightening the screws. Especially in the lateral part of the maxilla plate fixation alone tends to produce an outward rotation of the segments. Therefore, additional dental fixation with arch bars or orthodontic devices is recommended. Mandibulomaxillary fixation can be removed after stable fixation. The occlusal splint is fixed with two or three wire ligatures to brackets in the upper jaw. It stays in place for approximately two weeks.

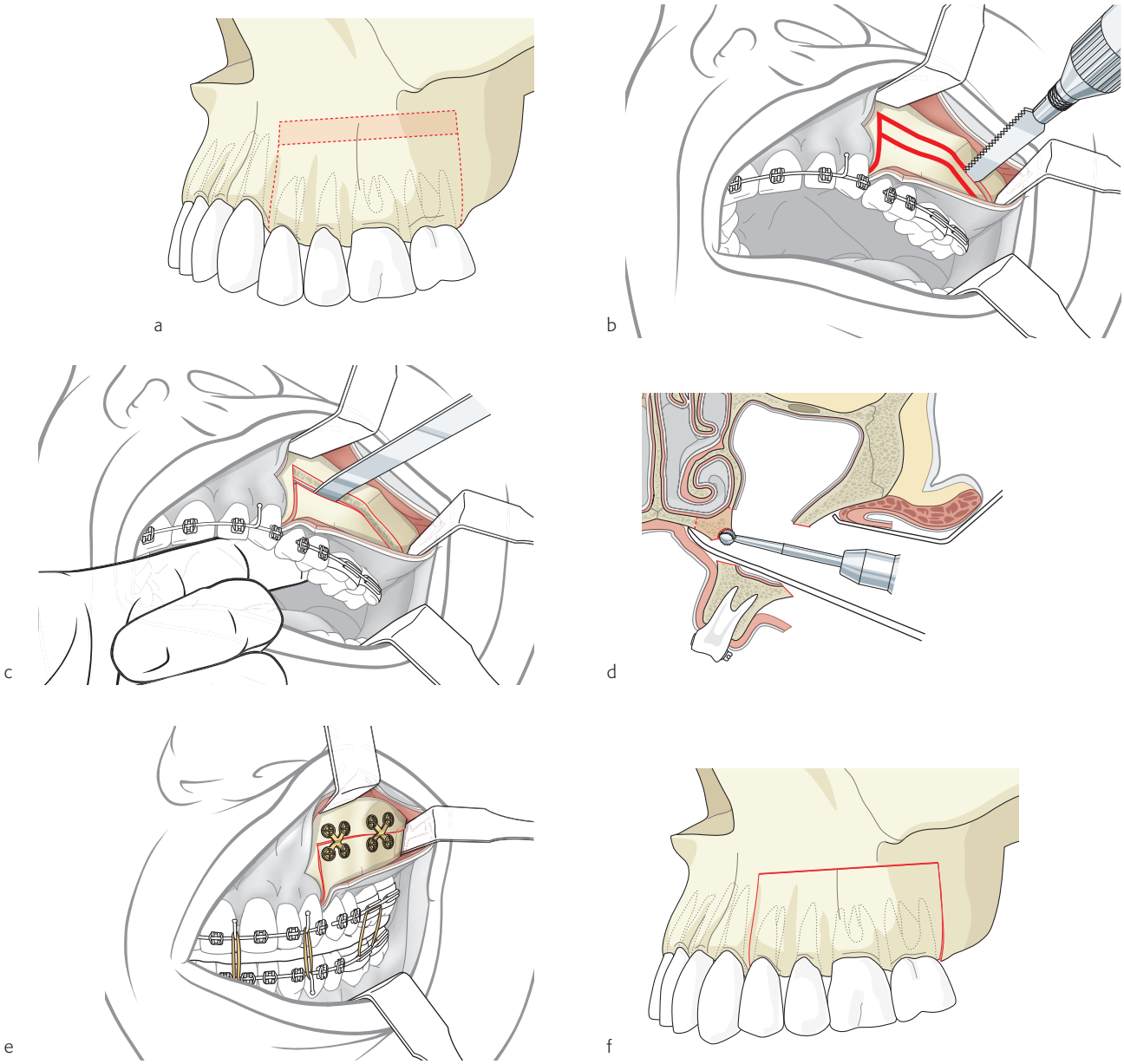

Fig 7.3.3-4a–f Lateral maxillary block osteotomy.
a Marking of the osteotomy zone.
b Horizontal osteotomy performed with a microsaw. Vertical vestibulary incision with small horizontal extension.
c Osteotomy of the palatal process with an osteotome. Protection of the palatal mucosa through the surgeon's finger.
d Shortening of the bony lamella on the palatal side after caudal mobilization of the lateral segment.
e Fixation of the lateral segment with cross-shaped plates after repositioning with the help of an occlusal splint.
f Position of lateral segment after correction.