CASE REPORT

Atraumatic Extractions to Preserve the Alveolar Socket for Immediate Implant Placement

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Abstract

The Benex Extraction Kit is an advanced, atraumatic tooth extraction system that uses controlled vertical force to remove roots while preserving surrounding bone and soft tissues. Its minimally invasive design makes it especially valuable in immediate implant placement, particularly in the aesthetic zone.

The system includes the Benex EXTRACTOR (lifting device), self-tapping extraction screws, guiding sleeves, and a support stand for stable, force-free elevation. After preparing the root canal, a screw is inserted and connected to the lifting mechanism, allowing for safe, flapless extraction with minimal trauma.

Clinical studies show that the Benex Kit is highly effective for single-rooted teeth, promoting excellent healing, reduced postoperative discomfort, and preserved alveolar ridge integrity—key for implant success and esthetic outcomes.

By eliminating the need for surgical flaps and preserving socket architecture, the Benex system has become an essential tool in modern implantology and minimally invasive dentistry.

Keywords: Anterior implant esthetics, Atraumatic extraction, Benex kit, Blue M gel, Bone grafting, Immediate implant placement, Implant site preservation, Minimally invasive dentistry, MUA, Sutures, Temporary prosthesis.

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Introduction

Atraumatic extraction is a cornerstone of modern implantology. With the growing emphasis on implant site preservation, clinicians seek minimally invasive techniques that ensure both bone integrity and optimal esthetic outcomes. Conventional extraction methods, while effective, can cause trauma to the alveolar bone, especially in the anterior maxilla, leading to complications that may delay or compromise implant placement.

The Benex® extraction system has emerged as a revolutionary tool for atraumatic extraction, enabling clinicians to preserve bone architecture and streamline implant placement—particularly in cases where immediate rehabilitation is planned.

Studies included anterior teeth and premolars unsuitable for forceps extractions, although the system can be used for multirooted teeth after separation. However, an investigation reported a lower success rate in multirooted teeth (43%), whereas single-rooted teeth had a far higher success rate (89%).[1,2] This system accelerated soft-tissue healing, decreased pain, wound size and a marked reduction in the need to perform flap surgery for the removal of teeth not suitable for forceps extraction.[3]

The Need for Atraumatic Extraction in Implantology

In implant dentistry, preserving the surrounding hard and soft tissues during extraction is critical. Alveolar ridge integrity directly influences the esthetic and functional outcomes of implant-supported restorations. Traumatic extraction often results in bone fractures or loss of buccal plates, necessitating additional procedures such as bone grafting, which increase treatment time, cost, and complexity. Atraumatic techniques aim to:

- Minimize bone resorption
- Preserve soft tissue contours
- Reduce post-operative complications
- Facilitate immediate or early implant placement
- Affect long-term stability and esthetics

Tools like the Benex kit help clinicians achieve predictable atraumatic extractions with less surgical intervention and faster healing.

Overview of the Benex Extraction System

The Benex® (Benex Control Extraction System) is a specialized device designed to extract teeth—especially roots—in a vertical direction using controlled force, reducing lateral stress and trauma. (Fig. 1)

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Fig. 1: Benex Kit

Figs 2A to C: (A)Preoperative; (B and C) Base Plate

Key Components

- Central Screw System: Anchors into the root canal to apply traction force
- Support Column/Base Plate: Rests on adjacent teeth or alveolar ridge
- Lifting Mechanism: Provides a gradual, controlled vertical extraction motion

This system is particularly useful for roots without crowns or fractured teeth, where conventional forceps may be ineffective or risk damage to the socket walls.

Clinical Advantages of the Benex Kit

1. Minimal Bone Loss: By applying axial (vertical) forces, the Benex system avoids lateral pressure that can fracture socket walls, particularly the fragile buccal bone.
2. Improved Implant Site Preservation: With intact socket walls and minimal trauma, clinicians often find it easier to proceed with immediate or early implant placement with predictable outcomes.[4]
3. Reduced Need for Surgical Intervention: Many extractions that would otherwise require flap elevation or sectioning can be completed with the Benex kit, reducing surgical morbidity.
4. Better Healing and Reduced Pain: Atraumatic procedures tend to result in less post-operative discomfort and faster healing, improving patient satisfaction.[4]
5. Efficiency in Challenging Cases: The Benex kit excels in cases involving endodontically treated teeth, retained roots, or teeth fractured below the gingival margin.

Clinical Workflow Using the Benex Kit

1. Case Selection: Ideal for single-rooted teeth or remaining roots; multi-rooted teeth may require sectioning first. Success rate: 83%; notably higher for single-rooted teeth (89%) versus multirooted ones (43%), with a risk ratio of failure at 5.2 for multirooted cases.
2. Access Preparation: A canal is prepared in the root, and the screw post is inserted.
3. Device Setup: The base plate is positioned, and the vertical extraction system is assembled.

Figs 3A to E: (A)Drilling with lindemann; (B)Benex extractor; (C)Extracted teeth; (D and E)Removed teeth to E: (A)Drilling with lindemann; (B)Benex extractor; (C)Extracted teeth; (D and E)Removed teeth

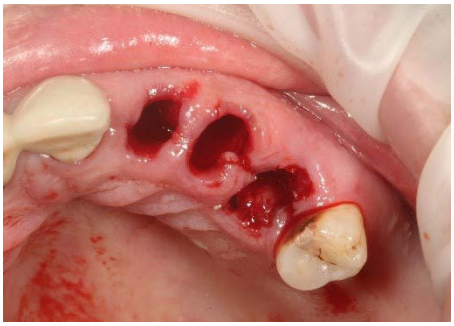


Fig. 4: Clean socket

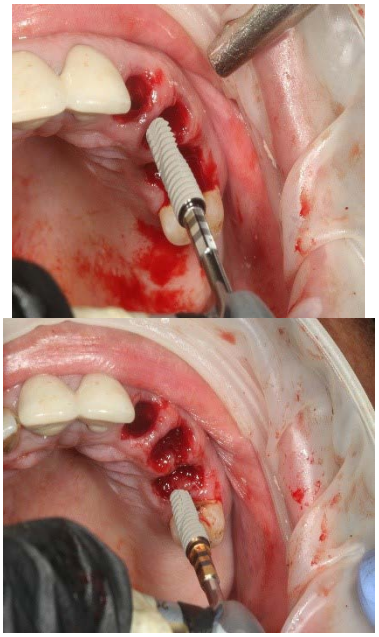


Fig. 5: Implant placed

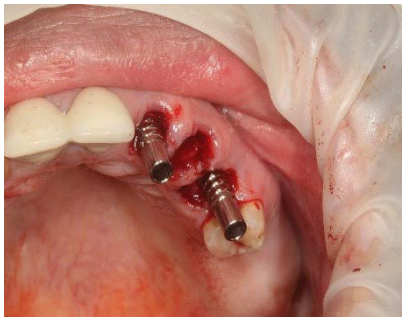


Fig. 6: Abutment placed

4. Controlled Extraction: Gradual lifting force is applied until the root is extracted.
5. Site Evaluation and Implant Placement: The socket is assessed for immediate implant placement or grafting if needed.[5]

Clinical Case Report

In a recent clinical case at our practice, patient sunita Devi, resident of house no. 286 devli village, new delhi, has reported

for removal root stumps and wants a fixed permanent restoration, here we using- the Benex kit was utilized for atraumatic extraction of three upper left anterior teeth (Fig. 2A). The patient required implant-supported restoration with esthetic focus (Figs 2B and C).

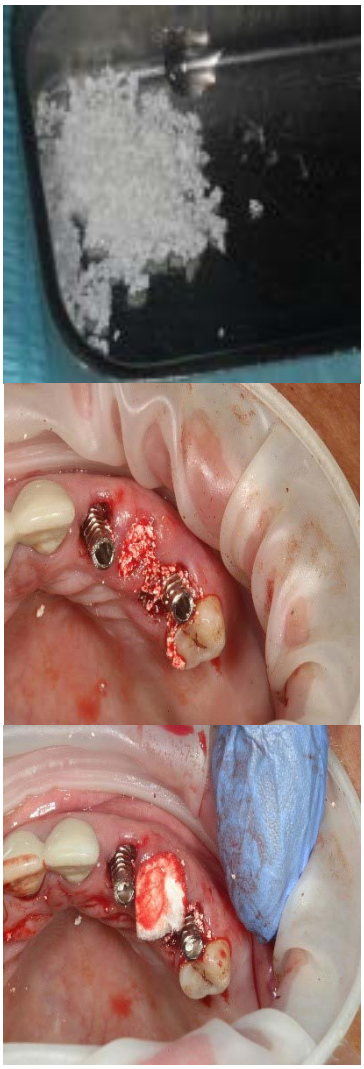
Procedure Summary

1. Atraumatic Extraction with Benex Kit
   - Three upper anterior teeth were extracted using the Benex system (Figs 3A to E).
   - The vertical, controlled extraction preserved the buccal and palatal bone entirely.
   - No flap was needed, and no sutures were required at the extraction sites—a testament to the minimally invasive approach (Fig. 4).
2. Implant Placement
   - at 22 (13.5 mm) and 24 (12 mm)implants, SQdentis (Korea) were immediately placed at ideal positions with excellent primary stability (Figs 5A and B).
   - Temporary abutments were connected during the same session (Fig. 6).
3. Socket Grafting
   - The PONTIC Site (where an implant was not placed) was grafted using particulate bone material Ti-oss, KOrea to preserve the ridge (Figs 7A to C).
   - 4 - 0 vicryl Sutures were applied using blue M gel (NETHERLANDS) to enhance healing DUE TO ITS PROPERTY OF SLOW OXYGEN RELEASE AND LACTOFERRIN AS AN ANTIBACTERIAL AGENT (Fig. 8).
4. Immediate Temporary Prosthesis
   - For esthetic purposes, an immediate temporary prosthesis was delivered the same day, allowing the patient to leave with a confident smile (Fig. 9).

This case demonstrates the power of atraumatic extraction in implantology preparation. The Benex kit enabled precise removal, preserved bone, eliminated the need for extensive flap surgery, and allowed for smooth transition to immediate implant placement and provisionalization.

Figures & Case Images

- Benex kit setup on anterior teeth
- Extracted roots showing minimal trauma
- Immediate implant placement photos
- Graft site with sutures and blue M gel
- Temporary prosthesis delivered same day

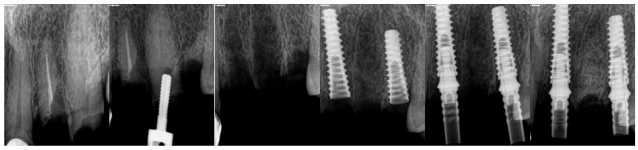


Figs 7A to C: (A) Bone graft; (B) Bone graft placed; (C) Rapi plug placed

Fig. 8: Blue M gel placed

Fig. 9: Temporary prosthesis

X-ray Images



1 2 3 4 5 6

1. Pre op x-ray image showing 22 is RCT treated.
2. X-ray taking after central screw placed.
3. X-ray shows socket after removal of teeth.
4. X-ray taking after immediate placement of implant.
5. X-ray shows placement of temporary abutments.
6. final X-ray taking after placement of socket bone graft in 23 region.

Benefits of Using the Benex Kit

- Bone Preservation: Critical for implants, especially in esthetic zones
- Minimally Invasive: Reduces patient discomfort and healing time
- Efficiency: Facilitates immediate implant placement and shortens treatment time
- Clinical Versatility: Useful for fractured teeth, endodontically treated roots, and complex extraction cases

Limitations and Considerations

- Learning Curve: Proper training is essential to avoid complications.
- Not Suitable for All Cases: Severe ankylosis, fused roots, or very shallow root length may reduce effectiveness.
- Cost of Equipment: The initial investment in the system may be a barrier for some practices.

Conclusion

The **Benex extraction system** represents a major advancement in modern dental surgery. Its role in **atraumatic extraction** and **implant site preservation** cannot be overstated, particularly for clinicians focusing on esthetic outcomes and patient comfort. Incorporating this tool into daily practice empowers dental professionals to deliver efficient, predictable, and high-quality implant treatment.

Our clinical experience confirms the practical value of this innovation—blending precision with preservation for superior implant outcomes.

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