Trefoil™
The next full-arch revolution
A revolutionary fixed solution to treat more patients better

Nobel Biocare has led innovation in full-arch solutions for over 50 years. By continually challenging existing treatment methods we aim to drive efficiency and make high-quality implant treatment a viable choice for more patients.

The Trefoil system is a breakthrough in efficiency for treating the mandible. Using a pre-manufactured bar with a unique fixation mechanism, it can adjust to compensate for inherent deviations from the ideal implant position. This is a new fixed solution for definitive teeth in one day.*

*Depending on clinician preference and close cooperation with the laboratory.

The Trefoil Bar is delivered pre-assembled
More patients benefit from a fixed solution

“The Trefoil system embodies the Nobel Biocare objective – treat more patients better. With this improved efficiency comes the opportunity to bring the benefits of osseointegration to a whole new patient population.”

Dr. Kenji Higuchi, US

Several studies confirm implant-assisted complete prostheses are more advantageous than conventional dentures. The benefits of fixed solutions can outweigh the cost of a fixed-removable for many patients when considering implant-supported solutions.

Fixed solutions offer:

- improved function with a higher bite force
- better retention and stability
- avoidance of some disadvantages of removable solutions including more mucosal problems and the wear of components.

As an elective surgery, clinicians must take into account many patient preferences and circumstances.

Treating more patients better – a broader portfolio of fixed treatment solutions

The Trefoil system offers a high-quality efficient fixed solution for more edentulous patients and patients with failing dentition.

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Low cost / versatility  |  High cost / versatility

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Mandible & Maxilla  |  Fixed  |  Mandible |  Mandible & Maxilla
A breakthrough in workflow efficiency

An innovation in comparison to the conventional treatment method that brings new efficiencies at almost every step – from manufacture of components to definitive restoration.

The Trefoil system can offer reduced chair time and shorter time-to-teeth compared to conventional treatment by combining:

✔️ A pre-manufactured definitive bar
✔️ A prosthetic workflow
✔️ An acrylic prosthesis
✔️ Reduced restorative componentry

Estimation of active working time based on median time observed in clinical use.

*Data on file from use by experienced clinicians and labs.
Definitive teeth in a day*

*Dental implant patients are increasingly demanding immediate restorations.²,³

To meet those demands, dental professionals are seeking solutions with fewer surgical steps, shorter treatment time, high success rates, high patient satisfaction and function on the day of surgery.²,³

The Trefoil system is a cost-efficient solution that allows Immediate Function and makes fixed and definitive teeth on the day of implant surgery* an option for more patients.

*Depending on clinician preference and close cooperation with the laboratory.
**Shorter time-to-teeth:** the Trefoil system enables a fixed and definitive prosthesis to be placed up to six months earlier than conventional treatments with provisional prosthetics.

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**Trefoil™**

**Implant placement and fixed definitive restoration in one visit.**

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**Conventional treatment**

- **1 day**
  - Implant placement: implants and provisional denture are placed.
  - **3-6 MONTHS**
  - Fixed and definitive restoration is placed.

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*Depending on clinician preference and close cooperation with the laboratory.

Conventional treatment: in cases where bone grafting needs to be performed, the total treatment time may take up to nine months. The comparison above demonstrates possible treatment methods with approximate treatment times.
Straightforward prosthetic workflow

The Trefoil Bar simplifies the creation of the definitive acrylic prosthesis and saves substantial time for the restorative clinician and the lab.

The Trefoil system’s unique fixation mechanism compensates for deviations in implant placement. With passive fit possible for a pre-manufactured bar, there is no need for CAD/CAM and chair time is reduced.

Reduced chair time and restorative work
The restorative workflow is simplified thanks to the pre-manufactured bar. An experienced clinician and lab will require approximately six hours of active working time.

Estimation of active working time based on median time observed in clinical use.**

Prosthodontist
1 hour

Surgeon
2 hours

Lab
3 hours

*Depending on clinician preference and close cooperation with the laboratory.
**Data on file from use by experienced clinicians and labs.
The first pre-manufactured bar with a passive fit

The ingenious fixation mechanism is a breakthrough in treatment for treating the mandible. The pre-manufactured bar, anatomically designed for the natural arch of the mandible, contains adaptive joints that adjust to compensate for horizontal, vertical and angular deviations from the ideal implant position.

Angular deviation ±4.0°  Horizontal deviation ±0.4mm  Vertical deviation ±0.5mm
The first pre-manufactured bar with a passive fit

**Proven strength when pushed to the limit**
The Trefoil system maintains its strength when pushed to the extreme of its compensation capability. In fact, tests prove almost no difference in fatigue limit when the maximum configuration is applied compared to when there is none.

![Graph showing median fatigue limit with and without compensation](image)

**p = 0.292**

**Patent pending for fixation mechanism**
Each mechanism has five self-adjusting joints that help correct the position of the pre-manufactured bar, enabling the passive fit of the definitive prosthesis.
An integral part of the Trefoil system is the Trefoil Implant. It combines the proven parallel-walled implant design, a machined soft tissue collar and a conical connection.

**Conical connection for compatibility**

The proven conical connection platform ensures compatibility with the Trefoil implants using the current prosthetic offering.

**Machined tissue collar for easy access**

The prosthetic platform is placed at soft tissue level, which allows easy access and leaves the soft tissue undisturbed throughout the entire workflow.

**High implant survival with TiUnite**

The TiUnite implant surface is proven for high survival rates and low prevalence of peri-implantitis, as shown by the largest ever study of a single implant brand.⁶
The Trefoil™ PureSet

Organized to save your time
The Trefoil system also introduces a new high-grade stainless steel tray to support your dedication to uncompromising hygiene. The Trefoil PureSet surgical tray is designed for reuse in clinical environments, and keeps your components organized to save you time. Instruments stay together throughout cleaning and sterilization.
Clinical case: Mandibular full-arch restoration using the Trefoil system

Case description: Mandibular edentulism
Patient: Male, 77 years old, hypertension, atrial fibrillation, medication - Warfarin
Clinical situation: Failing lower dentition
Surgical solution: Trefoil™
Restorative solution: Restorative solution includes a temporary maxillary denture and the Trefoil protocol for the mandible.
Surgery date(s): August 24, 2017
Total treatment time: 24 hours

A/Prof. Glen Liddelow BDSc, MScD, DClinDent
Prosthodontist, Perth, Western Australia
Surgery and Prosthetics

Michael Standish CDT
Perth, Western Australia
Laboratory procedures

Clinical case summary

Initial clinical situation

Mandibular residual ridge.
Pre-treatment panoramic radiograph.
Preparation of the central implant site. The central implant is inserted using the Positioning template.

Implant placement

Verification of implant placement

Impression for verification index

Tissue site preparation

“All the Trefoil system provides an outstanding option for the edentulous patient and will provide an affordable, quality solution.”
Dr. Glen Liddelow, Australia

Preparation of the central implant site.
The central implant is inserted using the Positioning template.
The central implant is in position.

All three Trefoil Implants CC RP with 4.5 mm collar are in place.
The Transfer Abutments and a non-engaging temporary abutment are placed to construct the verification index. The Transfer Abutments are luted with light-cured resin to fix the verification index.
Placement of the Healing Abutments. The site is sutured.
Clinical case: Mandibular full-arch restoration using the Trefoil system

Laboratory procedure

Conventional wax-up and processing for a wrap-around hybrid acrylic / titanium fixed prosthesis.

Delivery of the final bridge on the day of surgery. Occlusion is checked for even contact and anterior guidance. Accessibility for cleaning is verified and screws are tightened to 35 Ncm. Access holes are sealed with Teflon and composite.

Happy patient after the treatment.

See the full clinical case on nobelbiocare.com/trefoil
Treatment success

In an ongoing five-year, multi-center study across four continents, results are already being reported for implant and prosthetic survival rates.5

This important study7 has now expanded to include 110 patients at the request of participating clinicians to meet the needs of their patients.
Treating more patients better with a more affordable solution

For edentulous patients and patients with a failing dentition, a removable implant-supported solution may offer a lower price compared to a fixed prosthesis. However, more aspire to a fixed prosthesis, proven to significantly improve their quality of life. As one study shows, patients hoping for a fixed solution but only receiving a fixed removable are dissatisfied with their treatment outcome. For patients held back by finances from their treatment of choice, the Trefoil system offers a faster and more affordable fixed treatment solution.
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Stability is achieved, Nobel Biocare implants allow a fixed provisional restoration to be loaded on the day of surgery.

References


