THE PROSTHETIC REVOLUTION
—the Minimally Invasive Prosthetic Procedures (MIPPs) and new digital tools for the treatment plan

Minimally invasive prosthetic procedures (MIPPs)

Nowadays the demand for prosthetic treatments is steadily rising. The importance given to esthetics in our society is growing, especially among young people, and clinicians ought to be increasingly conservative in their treatments and take precautionary measures. This type of approach allows the dentist to maintain most of the remaining dental structure while re-establishing the proper relationship between function, esthetics, and duration of the prosthetic restoration.

Minimizing the removal of enamel while aiming to satisfy the esthetic expectations of the patient represents a risk for the clinician, especially when the remaining tooth structure is already partly worn. When treating a case extended to both arches with a severely worn dentition, the goal of the clinician should be to obtain micromechanical retention and mechanical strength though paradoxically limiting the amount of tooth preparation. The goal is to minimize a further damage of the tooth structure due to tooth preparation, maintaining as much enamel as possible. This procedure will allow the clinician to reduce the amount of dental tissue removed. By increasing the VDO, the clinician will be able to avoid invasive occlusal preparations and thus be able to bond the ceramic restoration to the remaining enamel. A permanent increase in the VDO is a safe and predictable procedure if done up to 5 mm; any discomfort related to the patient’s new VDO ratio of the patient will normally last no longer than one to two weeks.

When determining a modification in the VDO, the clinician should consider the following parameters:

1. Increase the vertical dimension of occlusion
In prosthetic rehabilitations extended to at least one full arch, an increase in the VDO of the patient can be important in order to achieve a successful esthetic and functional result. This procedure will help the clinician to reduce the amount of dental tissue removed. By increasing the VDO, the clinician will be able to avoid invasive occlusal preparations and thus be able to bond the ceramic restoration to the remaining enamel. A permanent increase in the VDO is a safe and predictable procedure if done up to 5 mm; any discomfort related to the patient’s new VDO ratio of the patient will normally last no longer than one to two weeks.

When determining a modification in the VDO, the clinician may consider the following parameters:

- clinical evaluation of the required space for restorative material;
- interocclusal rest space;
- evaluation of the facial proportions;
- phonetic sounds (“m” and “s” sounds);
- an acrylic preoperative mock-up.

Among these techniques, the one most effective in order to gain acceptance of the new VDO by the patient is the evaluation of speech, particularly with regard to sibilants or “s” sounds.

2. Reduction of the thickness of the monolithic ceramic material
The reduction in the thickness of the ceramic material used in the restoration is a great advantage of the MIPP technique. It has been proven that minimal thickness of lithium disilicate occlusal restorations, if supported by enamel, have a high load-bearing capacity, and therefore a high resistance to fracture. The key to the success of the restoration is its adhesive bonding, which must always be on enamel and involve an etchable ceramic material.

3. Preservation of enamel during tooth preparation
The preservation of enamel during tooth preparations is highly important in order to implement the MIPP technique. Traditionally the recommended conventional thickness in the occlusal area for porcelain restorations is 1.5–2 mm; however, these values can be reduced by using an etchable monolithic ceramic material with a decreased thickness of 0.5–0.8 mm bonded on enamel.

4. Adhesive bonding of the restorations
Adhesion to enamel can influence the design of the tooth preparation, allowing the clinician to maintain the maximum amount of dental structure and thereby achieve excellent treatment results, including lower post-cementation sensitivity, improved support of the ceramic restoration and avoidance of endodontic intervention. Moreover, a correctly performed adhesive procedure can eliminate the need for extensive tooth preparation, as well as the use of anesthesia. Success will depend on the ability to establish good adhesion between the tooth structure and the porcelain with correct per-
Location
The seaside resort town of Pesaro lies on the east coast of central Italy and is famous for its fine golden beaches lapped by the Adriatic Sea and picturesque old town. The outstanding Italian composer Gioachino Antonio Rossini so loved his hometown that he left most of his estate to Pesaro on his death. Make sure to visit his home, Casa Rossini, while you are there. Being the town with the highest number of cyclists in Italy, Pesaro can easily be explored by bike with its many paths. The old town with its cafes and restaurants is charming and there is much to see while strolling around. Famous for seafood, the town’s restaurants offer many local fish dishes that are not to be missed, with panoramic views over the water and the coastline. https://www.lonelyplanet.com/italy/pesaro/top-things-to-do/a/poi/360080

How to get there
The ACE Institute is located at Corso XI Settembre, 92. Pesaro is well connected by train with the following international airports: Marche Airport (45 minutes), Bologna Guglielmo Marconi Airport (1 hour and 30 minutes), Milano Malpensa Airport (3 hours and 30 minutes) and Leonardo da Vinci International Airport (3 hours and 30 minutes). Timetables and information on train connections are available at www.trenitalia.com.

If planning to rent a car, the distances from major airports to Pesaro are as follows: Ancona: 55 kilometers; Bologna: 135 kilometers; Milan: 350 kilometers; Rome: 370 kilometers.

Private transfers from/to the airport by car or bus can be booked with a local private company called Chiuselli. Contact information and cost estimates are available on its website, www.chiuselli.com.

What to see and do
If you wish to explore the territory surrounding Pesaro, we would certainly recommend you visit Urbino (36 kilometers from Pesaro), one of the most important tourist art destinations, notable for a remarkable historical legacy of Renaissance culture.

Gradar and its fortress (15 kilometers from Pesaro), Candelara and its castle (8 kilometers from Pesaro), and Novilara and its necropolis (9 kilometers from Pesaro) are other historical sites that deserve a visit.

More information on guided tours and opening hours of museums, monuments and churches is available at the tourist information office located in viale Trieste, 164, close to sculptor Arnaldo Pomodoro’s sphere within sphere (Palla di Pomodoro; a ten-minute walk from the ACE Institute) and on its website, www.turismo.pesarourbino.it.

Where to stay
The ACE Institute is located in the historical center of the city and only a few minutes’ walk from the seaside.

Hotel Excelsior is a recently renovated boutique hotel with décor reminiscent of the 1950s. www.excelsiopresaro.it TripAdvisor Certificate of Excellence | 5-star

Grand Hotel Vittoria is a very elegant, traditional and refined hotel centrally located in a Belle Époque-style building. www.grandhotelvittoriapesaro.it | 5-star

Mercure Hotel is a modern hotel located on the seafront. www.mercure.com | 4-star

Nautilus Family Hotel, only opened in 2016, is located at the seaside and is the tallest hotel in Europe entirely built on a wooden structure. https://nautiluspesaro.edenhotels.it/it TripAdvisor Certificate of Excellence | 4-star

For alternative hotel suggestions:
www.apahotel.it

Ristorante Lo Scudiero is a fine-dining restaurant located in the former stables of the Palazzo Del Monte Baldassini. www.ristorantescudiero.it

Nostrano is a sophisticated fish restaurant very near to the Palla di Pomodoro. www.nostranoristorante.it | 1 Michelin star

Ristorante GIBAS is a very elegant restaurant in the Monte San Bartolo regional park overlooking the sea with mainly contemporary fish-focused fare. www.gibasristorante.it

Levante is a bright restaurant with a relaxing ambiance serving excellent fish dishes right on the sea. www.levante-food.com

Where to eat
Osteria La Guercia is located in a 5th-century historical palace overlooking the ruins of an ancient Roman villa and offers traditional regional cuisine. www.osterialaguericia.it

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formance of the etching procedure and appropriate use of adhesive materials.

The MIPP technique is characterized into six different classifications, which can be divided into two main approaches:

1. **Confirmatory approach**
The patient’s occlusion is left in maximum intercuspation:
   - MIPP 0 = Additional restorations with no preparation, mainly on enamel
   - MIPP 1 = Partial restorations with minimal tooth preparation, mainly on enamel

2. **Reorganization approach**
Modification of the VDO and centric relation (CR):
   - MIPP 2A = Partial restorations with minimal tooth preparation, mainly on enamel
   - MIPP 2B = Full-coverage veneers with minimal tooth preparation, mainly on enamel
   - MIPP 3A = One arch in CR with VDO alteration and tooth structure preservation, mainly on enamel
   - MIPP 3B = Two arches in CR with VDO alteration and tooth structure preservation, mainly on enamel

The use of the MIPP technique in prosthetic restorations aids the clinician in achieving excellent functional and esthetic results.

**New digital tools for the treatment plan: GETApp (Guided Esthetic Treatment Application)**
The need of clinicians all over the world for a tool that supports them in formulation of the correct treatment plan, combined with the new technologies that simplify and accelerate many prosthetic procedures, led us to develop a multimedia application that assists the dentist in all of the phases of data collection and analysis. This app is designed to interact with other available technological tools (such as new-generation 3-D face scanners), thus facilitating an entirely digital workflow for prosthetic rehabilitations; it is also essential to reach an enhanced communication between prosthodontist, implantologist, orthodontist and dental technician, as all of them will have access to the same information reported on a PDF file.

The GETApp (Guided Esthetic Treatment Application) was developed according to the systematic approach to data collection created by Dr. Mauro Fradeani. The app automatically analyzes all of the values and information on the patient collected by the clinician to determine the best possible treatment to be chosen. The user can modify the suggested treatment plan at any time, by adapting the selected parameters according to his or her specific needs.

The tool guides the dentist step-by-step through the complete decision-making process, aiding him or her in achieving optimal esthetic and functional results. The two main phases of data collection and processing offer detailed clinical explanations, which contribute to making GETApp a modern educational system for both simple and complex prosthetic rehabilitations.

By the clinician following all of the suggested steps and entering all of the
requested values and parameters, the app automatically generates a PDF file containing all of the information provided by the clinician. This allows him or her to easily share with the dental laboratory every detail for the fabrication of the ideal prosthetic work.

In conclusion, the benefits and possibilities provided by the GETApp to the clinician are as follows:
- Collection of data for patient anamnesis (the GETApp system can replace the medical records);
- Collection of all of the clinical data necessary for good communication with the dental team (radiographs, periodontal chart, health of each tooth, tooth color, previous dental treatments to be redone, stomatognatic dysfunction);
- guided and predictable method for dental photography and case documentation;
This section deals with the importation of the patient’s images. You can take the photo directly with your iPad, using the mask to centre the photograph correctly and the level instrument to position the device.

The evaluation of the occlusal ratio with overjet and overbite values is an essential moment in planning the treatment. These data will lead automatically to the many clinical implications that concern the treatment plan and surgery procedures.

- Collection of all esthetic and functional values necessary for the formulation of the treatment plan;
- Complete and automatized support in formulation of the treatment plan;
- Effective communication with the dental laboratory;

Innovative operative protocols such as the MIPP, combined with the use of modern digital systems such as the GETApp, represent a revolution in the approach to prosthetic treatment. These new procedures will undoubtedly help the clinician to confidently perform comprehensive treatments involving bridges, crowns and veneers on natural dentition and implants, from simple to complex full-mouth rehabilitation.
The viewed mask allows you to evaluate the position of the canines and any changes in size to be done to them in order to achieve an ideal incisal pattern.

The black dotted line shows the initial occlusal relationship while the red line shows the new occlusal relationship once modifications in GETApp in the previous steps have been completed. The purpose of showing this is to analyze the overbite and overjet values and therefore the functional aspect of the treatment plan you are preparing.
This step shows a summary of the size modifications in length and width of all the teeth in the upper arch and the lower sextant.

This step shows graphically a summary of the modifications undertaken on the upper and lower central incisor, as well as the overbite and overjet values, and any changes in VDO. The occlusal view of the upper arch and lower arch is also reproduced, with the prosthetic solutions chosen.