

IMPLANTS

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How Many Implants in the Edentulous Mandible?



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Fig. 1

How many dental implants would you like to see in the edentulous mandible? Certainly there are many questions:

- Fixed or removable?
- Direct attachments to the implants or connecting bar?
- Are there options for phasing treatment – specifically adding implants in the future to modify the prosthesis to improve retention and stability.
- Do we even need dental implants?

What is your strategy when presenting options to your patients?

Strategically, it might be best to plan with a fixed case in mind and work back from there to preserve the future restorative options for the patient. The question is ... how many implants can fit intraforaminally? This area of the mandible is where we have the most flexibility. Traditionally five-six dental implants were recommended for the edentulous mandible, although there has been a shift in thinking where a hybrid prosthesis could be supported by as few as four implants. And frankly, four implants could work well for a removable over-denture prosthesis. A fixed crown and bridge prosthesis might benefit from six implants particularly when concerned about mandibular flexure keeping the restoration in segments provides a few benefits (See Fig. 1 and Fig. 2).

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Fig. 2

The discussion really focuses on treatment plans where two or three dental implants are planned to assist in the retention of a lower removable overdenture prosthesis. Many factors need to be considered for a tissue supported implant (<https://www.speareducation.com/spear-review/category/implants>) retained overdenture when planning the definitive prosthesis.

- Anatomy of the ridge (severe resorption vs. excessive bone, U-shaped vs. V-shaped ridge form)
- Character of the supporting soft tissue (thin & delicate, sufficient keratinized tissue)
- The presence or absence of saliva, and the nature of the opposing arch (natural dentition, dental implant supported prosthesis, complete removable denture)

2 or 3 Dental Implants to Retain and Overdenture?

What is the benefit of adding a third implant? The purpose is to create an “indirect retainer” effect for the moments when a patient is chewing (imagine sticky food) where on opening the lower overdenture will have forces to lift the posterior segment off of the supporting tissues. The third implant will help to stabilize the overdenture to minimize rotational forces that could potentially pinch the soft tissue in the lower front.

A third dental implant to retain a lower overdenture is highly dependent on the anatomy of the mandible. For an indirect retainer to work as intended, the middle implant must be positioned noticeably anterior to the distal most implants.



Fig. 3

Take a look at the clinical photo of the mandible with 3 implants (See Fig. 3). What do you see? It has the look of a rather large U-shaped mandible with great character to the supporting tissues and a reasonable amount of saliva. The dental implants are positioned in line from right to left. The third implant in this position is not positioned anterior enough to function as an indirect retainer. I would argue that the additional retention provided with in this case an ERA or even a Locator type attachment may not provide a true benefit to the patient.

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The benefit of positioning the dental implants in the anterior segment of a large mandible is that the option of adding two additional intraforaminal implants distally remains open. There is a true value in keeping this option available in the event that the patient would like to transition to a dental implant supported prosthesis either in the form of a fixed hybrid or a removable over-denture.

And ... Two Dental Implants?

Two dental implants have been recommended as a minimum “first-choice” standard of care of our edentulous patients most famously referenced in the McGill Consensus Statement on over-dentures from May of 2002. Certainly, the advantages relate to minimizing the financial commitment for the patient while creating a point of retention to minimize the movement attributed to a traditional lower denture.

The question is where would you like to see the two dental implants positioned?



Fig. 4

Take a look at the clinical photo of the lower mandible with two dental implants in the anterior segment (See Fig. 4). As discussed, two dental implants in this location preserves the opportunity should the patient decide to proceed with a dental implant supported prosthesis. Two implants preserves this option regardless of how large the mandible is or if the quantity/quality of saliva changes over the patient's lifespan.

The ideal position for two dental implants is in the space between the location of the laterals and the canines. Take a look at Fig. 5 with the Locator housing positioned as described. In terms of the structural durability of the acrylic, the recommendation is to have 2mm of the pink acrylic to provide sufficient strength properties of the material. The acrylic is needed around the Locator housing as well as for the denture teeth. Imagine if the Locator housing was positioned under the canine – the tooth would have to be adjusted significantly and there is less room for acrylic. The decreased strength in the restorative material results in a greater likelihood that the over-denture will fracture in a common location – right around the Locator housing!

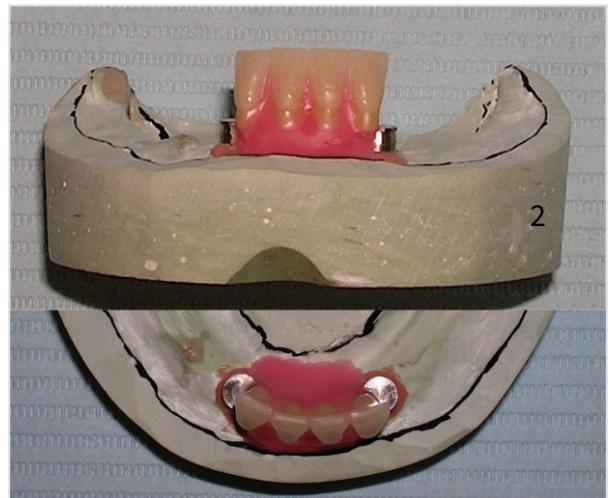


Fig. 5

The anterior location of the dental implant in the anterior segment also decreases the amount of rotational forces. Picture the longer lever arm in the posterior segment compared to the very short lever arm in the anterior segment.

Of course, the short answer to how many dental implants is ... it depends. Comment with your experiences with implants on an edentulous patient!

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