Denture wearers, as a population group, are the people that can benefit the most from dental implants. As dentists we are only too aware that the wearing of dentures can be a crippling experience for many of our patients. Alveolar bone is unique in that it is generally only present to support teeth within the jawbone. The loss of teeth triggers the physiological resorption of the alveolar bone and wearing of a hard acrylic denture hastens the resorption process.

With the slow progressive loss of alveolar bone, ridge height reduces, attached gingiva gradually decreases and muscle attachments are moved closer to the crest of the ridge. This combination of loss of alveolar ridge height and movement of the soft tissues resulting from the under lying muscle pull tends to increase the instability of the dentures.

Denture instability
This denture instability is most evident in the lower jaw. More often than not, most denture wearers have learned to tolerate an upper denture, but it is usually the lower denture that tends to cause the most grief. An upper denture has a propensity to be tolerated more readily because there is a larger surface area for the denture base to cover, which enables the “suction” effect, and the upper front teeth are key for smiling and talking when facing the general public. The lower denture on the other hand, has a much smaller surface area and the muscles of the tongue (on the inside), and lips and cheeks (on the outside) tend to dislodge the denture each time the patient tries to talk, chew or swallow. Once the alveolar bone is completely lost, the only way a denture can be retained is by careful muscle control between the lips, cheeks and tongue.

As patients get older, their muscle tonicity decreases and it becomes increasingly more difficult to stabilise dentures. All the early implant studies were devoted to the placement of dental implants in the lower jaw, between the mental foramina, thereby providing an anchor to enable full lower denture wearers to overcome these problems.

Implants not only help to provide increased retention and stability for unstable dentures, but they also help to protect and retain the alveolar bone, (and in some instances actually help to promote bone formation) from the continuous hammering that it receives from wearing dentures.

Improving denture wellbeing
In the lower jaw, the placement of two well-placed implants can dramatically improve the general wellbeing of a denture cripple. Although the overdenture on two implants is still predominantly mucosa-borne, it no longer floats around during function. In the more discerning patient, the placement of additional implants enables the denture to be less mucosa-borne and more implant-borne. Depending on the system that is used, as few as three to four implants can be used to support a fixed bridge. However, it is generally agreed that five strategically placed implants are required to support a fixed implant supported bridge. More than five implants in the lower jaw will enable a longer bridge to be constructed and provide back up should any of the implants fail. The number of implants placed should be determined by the type of restoration that will be placed; the quality and quantity of available bone height and the dentition in the opposing arch.

The number and placement of implants in the upper jaw is determined by the fact that the bone is of poorer quality than in the lower jaw. On average, a minimum of four implants are required for an implant supported overdenture and six to eight implants are required for a fixed implant supported prosthesis.

Cost-effective solution
A technically simple and cost-effective solution has been introduced by BioHorizons to improve the stability of the lower denture. The BioHorizons OS System can provide your patient with four implants to improve the stability of an unstable lower denture. For £99 (excluding VAT), the 5mm implant comes as a once-piece, transmucosal implant with the ball attachment already attached. The procedure is usually performed under local anaesthesia with a flapless approach, thereby minimising postoperative discomfort. Unlike mini-implants, which are only licensed as a transitional implant, this system has FDA approval for “permanent” usage in the lower jaw.

At the time of placement, the patient’s existing denture can be adjusted to accommodate the implants, thereby immediately loading the implants. As this is a one-piece ball attachment implant, it cannot be “upgraded” to a fixed bridge in the future. However, it will provide the simplest and most cost-effective solution to a patient that will gain the greatest benefit.

**About the author**

Dr Stephen Salt, BDS MDent (Rand)
specialises in prosthodontics and has 16 years of dental implantology experience. He is the principal of Century Dental Clinic, a state-of-the-art private dental practice situated in Putney. Dr Salt also teaches restorative dentistry at Guy’s Hospital and St Thomas’s School of Dentistry.