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Opinion

Old Patient and Old Implant: A Conundrum of Tomorrow

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For the last three decades, dental research and dental manufacturers focussed on developing newer and more efficient designs of dental implants. As a result, there have been multitude of dental implant manufacturers and brands which have been supplied to dental surgeons. Patient have been receiving ever increasing complexity of dental implant based treatments, and mostly enjoying very successful outcomes.

Patients have been very happy with the treatment outcomes and receive maintenance care regarding the implants. With progression of time, there will accumulation of implants which start showing signs of mechanical wear and deformation. Also as patient get older, with implants remaining in situ, biologically, patient's ability to maintain the implants or high quality of oral hygiene will reduce. Many patients also unfortunately develop cumulative age related illnesses including cancer, immunological problems, diabetes and chronic debilitation. Also, older patient population have less resources to priorities for dental specifically implants related treatment.

Frail patients suffering from illness, a prosthesis which has come to end of its life, inability of patient to tolerate complex surgery and limited financial resources can all present challenges. Also, there will be other factors like not knowing what brand of implants patients have, whether the components for those implants still available and from where to source them. Further whether you have the tools and the know how to manage the implants systems you never worked with so far could pose a problem. In this article, we have discussed some long-term problems in older patients and older implants and what we can do collectively to reduce the complications.

Identifying the problem

When patient present after long time, sometimes decades after original implant treatment, it is often difficult to diagnose what the problem is. As original treatment records and biomechanical information is unavailable to the new clinician, it becomes harder to make a sense of scale of the problem. Do a detailed examination and take history of the implant treatment. Questions should include who placed the implants, when and where. Does patient have any records like a warranty document, receipt or a contact telephone and address. This will enable you to find out what implants the patients may have. Then take radiographs, of each implant fixture. You may be able to compare the images of radiographs against a library of images to identify the make of the implant. There are websites like whatimplantisthis.com which may be of help.

Does patient have any spare components given to them at the original treatment. Often components such as locator abutments should be supplied to the patient, so when needed they can be replaced by the clinician without having to source the correct fitting one.

As a profession, we have duty to our patients to ensure the information about the treatment is maintained for long term. If need arises any time this information should be easily retrievable and supplied to the clinicians any other part of the world. With high migration of world population, and patients going abroad on health tourism, it is expected that often we will come across patients who had implants placed in far off places. Ideally patient should be supplied with a card containing make, brand, size, number and location of implants, de-

tails of bone augmentation. Also, if patient is given warranty on components and implants, details on who and how this will be provided if there are problems. Contact telephone or website details of manufacturers and laboratories is a very helpful resource. Dental technicians also should maintain log of product used is each prosthesis delivered to the patient including alloys, bonding materials, type of ceramic etc. specifically type of abutments, screws, their torque values may be very important. When treating a patient with suspected allergic reaction or sensitivity, it will be important to know precise makeup of the metallic components used in the prosthesis.

Preventing the problem

In later stage of life, when patient becomes dependent on care, physical mental and social frailty becomes dominant, dental intervention becomes challenging. Access to complex dental care becomes limited due to poor mobility, cost and unavailability of services. Patients with cognitive impairment and disability may not be able to express the difficulties they are facing. Following are the type of problems patient may present.

1. Loss of retention for dentures.
2. Patient can't manage to place the prosthesis due to lack of coordination.
3. Metal fatigue in components leading to loosening or fractures.
4. Advanced wear of occlusal components like acrylic and ceramic.
5. Biological failure of implants due to bone loss.
6. Inability to practice oral hygiene maintenance.

Most of the problems are preventable or can be electively intervened early to prevent developing complications. Most overdentures and tissue bearing with implant support. There will be ongoing bone loss in the tissue bearing areas. Dentures will need relining on regular intervals otherwise the denture will become completely implant borne. This will place excessive force on implants and lead to biologic or mechanical implant failure.

As the mechanical coordination becomes poor, patients may not be able to place or remove strong retention devices. Simpler retention obtained by magnets rather than rubber elastic retention could be desirable. Patients in care homes will need an identity marking on the prosthesis and care staff should be trained regarding insertion and removal of prosthesis.

Metal fatigue due to longevity of restoration has not been researched adequately. Long cycles of mechanical stress and strain will lead to engineering failures in the implant as well as prosthesis. Problem can be partly prevented by adhering to the manufacturers guidelines and using genuine components recommended. Also, use correct sized implants, allow good stress transfer from prosthesis to bone. The replica components may fit to given implants, but can cause damage to implant and bone by incorrect stress transfers to the bone. Just adequate fit of the component is inadequate, it should to designed to the purpose and should have high resistance to fatigue failure.

Fracture of the abutment screw is the commonest and most difficult problem. A fractured screw which can't be retrieved, will make the implant useless and can also make it necessary to remove the implant. Occlusal acrylic and ceramic will wear with prolonged usage. Patients may not realise this due to gradual nature of the change. Ideally all implant restorations should be retrievable, and importantly should be retrieved for correction of wear and discoloration. It is also useful to have multi attachment abutments so that different prosthetics can be designed on the same implants with minimising the cost.

Biological failures due to peri implant infection should be diagnosed and treated early. Various modalities of prevention including regular hygiene intervention is necessary. It should be recognised that elderly patients will not be able to use complex oral hygiene devises like flossing under a bridge etc. High pressure water pick irrigation and chemical plaque control like chlorhexidine may be useful.

Managing long term failure

Managing failed implant and prosthetic work in elderly patient is very difficult and often need compromising solutions. Retrieval of prosthesis may be difficult. Some cement retained crowns and bridges are not retrievable. Some implants may need removing and will cause significant surgical trauma and distress to the patient. Often patients are not willing to accept the fact that we can't repair or salvage the situation.

Any repair work, surgical or laboratory procedure incurs significant cost. It is recommended that all patients with dental implant work should take health insurance specifically against damage and cost associated with implant repair. Removal of integrated implant is very difficult process and should be avoided if possible.

Managing patients who presented long time after implant placement should be documented in detail. Often there may be medico legal implications to the original treatment provider sometimes liability may be shared because of any damage caused at the later stage in an attempt manage the problems. It is always, where feasible, patient be referred to the original provider. This is of benefit to the patient in several ways.

1. Patient will have access to original documentation at the surgery where work was carried out.
2. Patient may use the warranty or verbal assurance given to them at the original treatment against the cost incurred in managing the problem.
3. Clinician may be able to access the original lab technician to discuss the best outcome to the patient.
4. It is hoped that the components and system information will be readily available with the original provider including data and tools.

Where it is necessary to take over the care, the management should start in a similar way for a new patient. Detailed history, examination, imaging and record keeping is essential even in a case of a very obvious implant or component failure. Patient should be made fully aware of the problem, and a written cost estimate and consent for treatment should be provided. Often it is difficult to estimate the costs involved, unlike new implants.

Problem solving in implant dentistry is highly challenging but very satisfying and professionally rewarding experience. More of us will be involved in future in problem solving associated with ageing implants. It is time consuming, frustrating and outcome may not always be a success. Patient should be made a partner in the decision-making process to reduce the professional risks [1-3].

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