Classifying skin reactions at the Baha® implant site.

Holgers classification system for grading soft tissue reactions at the implant site is an invaluable aid. This system helps in determining a course of treatment and makes it easier to compare outcomes of different surgical techniques.

Reactions and preventions
Most skin reactions around the Baha implant are inflammations caused by bacteria(1). The origin of the inflammation is usually the interface between skin and implant. To avoid post-surgical complications, the skin and abutment interface should be kept immobile to allow the skin to adapt and create a seal around the abutment. This process is sometimes described as a race between tissue cell adaptation and bacterial adhesion on to the same surface. If the race is won by the tissue, the surface is occupied and defended and is thus less available for bacterial colonisation(1). Other factors influencing the incidence of soft tissue reactions are the removal of hair follicles from the graft and the aftercare(1).

It is vital to instruct clients on how to clean the area around the implant and to get regular follow-ups at the clinic. Cochlear provides an aftercare kit that helps professionals instruct the client on how to take care of the abutment site and their sound processor.

Holgers Classification
After Baha results were reported by the clinics, clinicians asked for a classification system to help them compare the reported results. In 1988, Dr. Holgers published an excellent article(1) on how to classify skin reactions around skin penetrating implants.

This system is now commonly used.

The Holgers classification is a scale from 0 to 4 that is used to grade skin reactions. 0 indicates a reaction-free area whereas 4 indicates a severe infection often requiring removal of the implant.

Grade 0
• Reaction free skin around the abutment
• Incidence: 90-95% (3-5)

Grade 1
• Redness with slight swelling around the abutment.
• Incidence: 3-5% (3-5)

Grade 2
• Redness, moistness and moderate swelling.
• Incidence: 1-4% (3-5)

Grade 3
• Redness, moistness, and moderate swelling with tissue granulation around the abutment.
• Incidence: 0.5-1.5% (3-5)

Grade 4
• Overt signs of infection resulting in removal of the implant.
• Incidence: < 0.5% (3-5)

Measuring incidence
There are two methods for measuring incidence. Both methods have been used in outcome studies(14).

Method 1: The incidence for each grade is quoted as the number of observed skin reactions divided by the number of follow up visits. For example, in 1000 follow up visits 10 grade 3 reactions were observed leading to an incidence of 1%.

Method 2: This method reports the number of patients that did not have skin reactions during the follow-up period. When using this method, note that the longer the patients are followed, the more likely it is that they will have a reaction, which makes it very important to compare studies with equal follow-up times.

Reported results
• A series of 177 implants followed for 4-14 years were reviewed in the Countess of Chester hospital in the UK(5). Here a total of 2.3% of the patients had skin reactions of grade 2 and above when measured with Method 1. 72% did not have any skin reaction during the follow up when measured with Method 2.

• 150 patients were followed for 0-10.5 years by the Radboud University Nijmegen medical center in The Netherlands(3). 65% of the patients had skin reactions of grade 2 and above when measured with Method 1. 73% of the patients did not have any skin reactions during the study when measured with Method 2.

To summarize, skin reactions are not uncommon but most reactions are of a less serious nature and are easily resolved. However, it is important to instruct patients on how to take care of their abutment site and how to treat their skin reactions. They should also be instructed to contact the clinic if the reaction persists. Severe skin reactions should be reported to Cochlear by the clinic. And remember; a skin reaction is typically easier to treat in its early stages.
Clobetasol provides a more effective treatment for skin overgrowth than does surgical soft tissue reduction. Treatment with Clobetasol enables the client to resume using their Baha quicker.

Bone-anchored hearing aid abutment skin overgrowth reduction with Clobetasol

This study looked at skin growing over the abutment. It compared the treatment of Clobetasol (a steroid cream used to treat psoriasis) with the surgical reduction of the soft tissue. 13 patients were treated with Clobetasol and 7 with soft tissue revision.

Key statements:
- Since the introduction of the Baha surgical procedure, our technique has evolved. Initially, we performed only soft tissue reduction to raise the abutment above skin level. However, we observed that many patients experienced soft tissue inflammation, and this prompted us to reduce the subcutaneous tissue.
- Beyond the reduction of soft tissue, an important factor in limiting inflammation around the implant relates to the post-operative care. Regular follow-ups by professionals and daily care by the patient seem to be of great importance.
- The Baha dermatomate achieves skin healing outcomes equal to the U-graft flaps created by experienced Baha surgeons.

An approach to bilateral bone-anchored hearing aid surgery in children: contralateral placement of sleeper fixture

This study concerns 7 clients operated on one side instead of the ipsilateral side. This contralateral sleeper placement makes it easier to fit bilateral Bahas at a later time.

Key statements:
- In cases of trauma or failure of osseointegration, the sleeper fixture obviates the necessity of a repeat first-stage procedure and its four to six month waiting period while the osseointegration occurs.
- In the seven reported cases, the contralateral fixture has not been needed as a reserve or backup. However, in four of the seven cases where bilateral Bahas were later implanted, the contralateral fixture placement reduced the number of procedures those patients required.

REFERENCES