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# The Use of ShearBan<sup>®</sup> in addressing dermatological concerns encountered in the management of deformational plagiocephaly.

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The principles governing the orthotic management of deformational plagiocephaly are well established. Restraining forces are created over bossed areas of the skull while voids are ensured over those regions where further cranial growth is desired. Thus, some degree of pressure against the skin overlying the skull is required to facilitate ideal outcomes. This technical note is intended to describe three common applications for ShearBan<sup>®</sup> when managing these forces.

## **Persistent Erythema or “Redness”**

Parents of infants with cranial remolding orthoses are commonly advised to remove their child’s helmet daily for a one hour period. The purpose of this routine is to ensure that whatever redness may be present on the skin when the helmet is removed disperses within a reasonable amount of time. When skin redness resolves within an hour of a helmet’s removal, the pressures associated with the helmet are generally reasonable. When skin redness persists beyond the hour, some form of clinical intervention is typically required.

Clinically, the first determination to be made is whether the redness is the result of pressure, friction, heat or some combination of these elements. Among these, redness due to excessive heat is quite common and the easiest to identify. Redness due to heat tends to cover broad areas of skin and is characterized by a sudden onset. In such cases, families will often report that the helmet was fitting fine for an extended period of time, followed by the sudden appearance of broad redness covering the entire forehead or the entire side of the forehead. Such redness will often extend right up to the trimlines of the helmet. Careful questioning will typically reveal that the infant in question has experienced some event that would precipitate a sudden increase in body temperature. Illness, teething and fever are commonly sited. In these cases, modifications to the helmet are largely uncalled for. While the process of allowing the skin to recover from the heat rash may take several days, helmet use can typically be resumed at that point without altering the helmet itself.

If elevated body heat and the ensuing heat rash have been eliminated as causal agents, modifications to the helmet may be required.

### **Temporal Extensions or “Sideburns”**

The temporal extensions of the helmet assist with limiting the tendency for these devices to rotate on the skull. Presumably because of the dynamic nature of the skin tissue in this region and the movement encountered with oral and facial movements, it is not uncommon for redness to appear in this area, particularly on the sideburn opposite the posterior flatness (see Fig 1). In such cases, clinicians should ensure that the pressure over the tissue in question is not excessive. Once this is verified, the addition of ShearBan<sup>®</sup> over the temporal extension in question has been found to reduce the shear in that area and will typically prevent recurrence of the redness once the skin tissue has been allowed to heal (Fig 2).



Fig 1



Fig 2

## Parietal Corners or “right above the ear”

Clinical observation has indicated that this is a common area for patients to experience persistent redness (Fig 3). The area commonly requires adjustment at the time of fitting and should be monitored throughout the use of the helmet. The duration of the redness after helmet removal may increase with age, consistent with the growth of the infant and continued adjustments in this area are not uncommon. This pattern is more commonly encountered on the same side of the occipital flatness. This is not surprising as the forces applied by the helmet on the side contralateral to the occipital flatness can be spread across the entirety of the parietal area and bossed occiput. In contrast, on the side of the occipital flatness, pressures are confined to the parietal apex as the flattened occiput is intentionally left void of any pressures. Because growth at this apex should be restricted to the extent possible, clinical experience suggests that the skin will tolerate more pressure in this area when friction is reduced with the localized application of ShearBan<sup>®</sup> (Fig 4).



Fig 3



Fig 4

## Frontal bossing of “the forehead”

When the asymmetries of deformational plagiocephaly extend beyond the posterior flattening and begin to affect the symmetry of the forehead, corrective forces need to be applied by the helmet in this region as well. Clinical experience suggests that resolution of asymmetries across the forehead is more challenging to obtain, presumably because of the thicker nature of the bone in this region when compared to the occiput and the reinforcing qualities of the brow, creating an I-beam effect. When frontal asymmetry is encountered, experience suggests that the corrective forces across the bossed or elevated forehead should be quite aggressive for optimal results. These forces can result in localized persistent redness (Fig 5). As with the parietal corners, experience suggests that the skin in this area is more tolerant to force when friction is reduced through the addition of ShearBan<sup>®</sup> (Fig 6).



Fig 5



Fig 6

## Conclusions

Forces against the skin are an integral part of the use of cranial remolding helmets. In managing these forces, the targeted use of ShearBan<sup>®</sup> can reduce the friction encountered, improve the skin's tolerance of corrective pressures and generally benefit the health of the skin tissue overlying the scalp.