



The “bagel head” cosmetic modification: myths and medical complications for dermatologists to consider

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ABSTRACT On September 23, 2012, the television program *Taboo* on the National Geographic Channel featured individuals in Tokyo undergoing the “bagel head” cosmetic modification. Dermatologists may encounter patients who undergo the bagel head procedure and subsequently present with a cutaneous infection. The purpose of this article is to delineate the bagel head procedure, note responses to sensationalist claims made by the media about this procedure, and discuss potential medical complications from this procedure. Specialists and primary care physicians who encounter reports of a specific extreme body modification for the first time should review discussions of the modification by its critics and advocates in order to assess potential medical complications from the procedure more accurately.

Saline for the sake of style

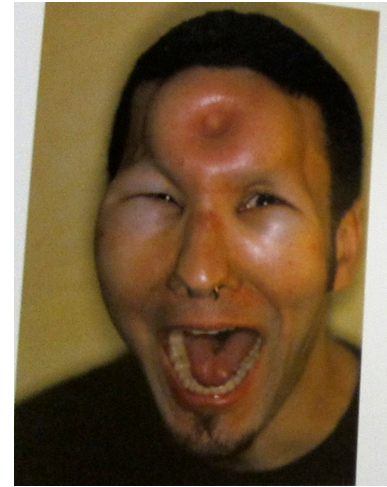
The Tokyo-based photojournalist Ryoichi “Keropy” Maeda, who documents the underground extreme body modification community of Japan, introduced the “bagel head” cosmetic modification to Japan after learning about the procedure from Jerome Abramovitch (Figures 1 and 2) [1]. In 1999, Maeda attended a convention dedicated to extreme body modifications, Modcon, that was held in Japan that year [2]. At Modcon, Maeda met Abramovitch,

a Montreal-based photographer and artist involved with extreme body modifications [3]. Abramovitch had pioneered saline infusions, and in 2007 Maeda established a team in Tokyo to administer saline infusions [2].

The procedure takes two hours [2], but the desired welt may take one hour to form [1]. As the saline is infused, the client may experience a stinging sensation and the feeling of liquid trickling along the head and face [4] or headache [1]. As the saline infusion nears completion, the client may become somnolent [4]. Four hundred milliliters of saline are



Figure 1 (above). Bagel head. Image courtesy of La Carmina (<http://www.lacarmina.com>).
Figure 2 (right). Bagel head. Image courtesy of La Carmina (<http://www.lacarmina.com>).



ultimately infused into the person's forehead to create the welt into which the certified "piercer" overseeing the procedure presses his thumb to create an indent and thereby cause the welt to look like a bagel (Figures 3 and 4) [5].

Dispelling myths

The episode of *Taboo* that featured the bagel head procedure has sparked more discussion about the procedure among

various media outlets. The sensationalism of this media coverage has misinformed individuals about the procedure. The company of La Carmina, who is a television host and blogger on fashion, was involved in the production of the aforementioned episode and has expertise with the bagel head procedure [6]. La Carmina [1] makes three arguments to counter erroneous reports about the bagel head procedure. First, the procedure is rarely performed and not a trend among the Japanese. Maeda is cited as saying that he has performed about 10 forehead saline infusions per year since 2007. However, there are likely other persons who provide this service. Second, the procedure is not permanent, as the saline is absorbed or urinated out in 6 to 24 hours. To note, Abraham [4] writes that the welt is present for at least 16 hours. Third, precautions are taken so that the procedure is not dangerous. This protocol involves the performance of



Figure 3. Bagel head procedure. Image courtesy of La Carmina (<http://www.lacarmina.com>).



Figure 4. Bagel head procedure. Image courtesy of La Carmina (<http://www.lacarmina.com>).

the procedure by a certified piercer only when the clients are well rested and sober, and with the use of a sterile saline drip, gloves, and face masks.

Anticipating medical complications

Omar Ibrahim, a dermatologist at the Connecticut Skin Institute and visiting assistant professor at Harvard Medical School, anticipates three complications from the bagel head procedure [5]. First, dehydration secondary to salt overload can occur if an inexperienced piercer uses a hypertonic saline solution instead of normal saline. Individuals who undergo the procedure should avoid crowded indoor spaces, such as nightclubs, as diaphoresis secondary to environmental heat in conjunction with the diuretic effect of the saline solution can increase the risk for dehydration.

Second, failure to use sterile saline solution can increase the risk for bacterial or fungal infections. La Carmina [1] acknowledges the possibility of infection, but argues that the use of hospital-grade saline and equipment and the performance of the procedure by a certified piercer minimize this risk. Nevertheless, clients should ask from where the saline has been obtained and whether the proper steps have been taken to maintain the saline's sterility. Furthermore, the piercer must sterilize the skin of the forehead with alcohol or another antiseptic prior to the procedure to reduce the risk of a subcutaneous infection by normal skin flora.

Third, repetition of the procedure could stretch the skin beyond its normal elasticity and thereby cause permanent laxity of the skin. Ibrahim's concern for this cosmetic complication runs counter to the insistence of the procedure's advocates that no skin is damaged or stretched. In a 2011 interview with the online magazine *Vice*, Maeda stated: "Everyone I know who has done it, no matter how many times, their skin has gone back to exactly how it was before" [7]. La Carmina endorses Maeda's view: "Nothing's damaged or stretched." [1]

Neurovascular injury is another potential complication of the bagel head procedure. Piercers should appreciate the vascular supply and innervation of the forehead. The trigeminal nerve provides sensory innervation to the forehead and scalp through the supratrochlear and supraorbital branches of the frontal branch of its ophthalmic division [8]. The supraorbital nerve goes around the superior orbital margin and ascends over the forehead to innervate the skin of the forehead and scalp as far back as the vertex, and the supratrochlear nerve goes around the upper margin of the orbit medial to the supraorbital nerve to innervate the skin of the lower part of the forehead that is close to the median plane [8]. The facial nerve provides motor innervation to the four muscles that move the forehead and eyebrows: frontalis, procerus, corrugator supercillii, and orbital portion of the orbicularis oculi muscles [9]. The blood supply of the forehead consists of the

supratrochlear and ipsilateral supraorbital branches of the ophthalmic artery, which is derived from the internal carotid artery [10]. Collateral circulation exists between these two branches, and the supratrochlear branch also anastomoses with the angular branch of the facial artery, which is derived from the external carotid artery [10]. The supratrochlear and supraorbital arteries ascend over the forehead with the supra-trochlear and supraorbital nerves [8].

Piercers must make more medial injections at acute angles relative to the plane of the forehead, as deeper and more lateral punctures increase the risk for neurovascular injury. Such injury can result in a hematoma, paresthesias of the skin of the forehead, and paralysis of one or more of the aforementioned muscles. A possible sign for injury secondary to the procedure is failure of the client to elevate the eyebrows, which requires the contraction of the frontalis, the only muscle that functions as a brow elevator [10]. Images of individuals who have undergone the bagel head procedure prove that there are variations of the procedure that increase the risk for dehydration, infection, skin laxity, and neurovascular injury. These variations involve using more than one syringe to create a single welt and creating two separate welts. Separate welts with an appreciable distance between them require more lateral injections, which increase the risk for neurovascular injury. Multiple injections can introduce a larger bolus of saline, thereby increasing the risk for dehydration and skin laxity and for subcutaneous infection injury through repeated penetration of the skin.

Conclusion

The bagel head procedure has received attention from various media outlets in the past year, and media sensationalism may have misinformed individuals about the procedure. Medical professionals who encounter reports of a specific extreme body modification for the first time should review discussions of the modification by its critics and advocates in order to assess potential medical complications from the procedure more accurately. Dermatologists may encounter patients who undergo the bagel head procedure and who subsequently develop a cutaneous infection. Identifying myths promoted by media sensationalism can help the skin specialist evaluate more accurately the risks that this procedure poses for these patients, and also anticipate other potential complications that the patient risks developing if he or she continues to undergo the bagel head procedure, such as dehydration and neurovascular injury.

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We would like to acknowledge La Carmina for her contribution to this article (<http://www.lacarmina.com>). La Carmina

is a TV host and journalist who has written profusely about extreme body modifications, including the bagel head procedure, and has conducted interviews worldwide with individuals who participate in body modification. Her TV company has arranged four shows to date about the bagel head procedure. Clips from these shows can be found at the following website: <http://www.lacarmina.com/bagelheads.php>

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