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Axial propeller flaps: A proposal for update of the “Tokyo consensus on propeller flaps”

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Dear Sir,

With this communication, we would like to propose an up- date to the classification of propeller flaps, since after its publication, new flaps have been described that need to be included. In 2009, the “Tokyo” consensus on propeller flaps defined a propeller flap as an “island flap that reaches the recipient site through an axial rotation”. In the actual classification, the type of nourishing pedicle, the degree of skin island rotation and, when possible, the artery of origin of the perforator vessel, need to be indicated.

With regards to the type of nourishing vessel, propeller flaps have been classified into 3 types:

- - subcutaneous pedicled propeller flap;
- - perforator pedicled propeller flap;
- - supercharged propeller flap.

In the last years, we have described a different type of propeller flap that we have defined as axial propeller flap. The reason for this nomenclature is that it does not fit in any of the above mentioned types because it not e by not e by definition5 e a perforator flap, but it is neither a subcutaneous pedicle propeller flap since the vessels are dissected free from the surrounding tissues (that are not subcutaneous tissues anyway). To date we have described two flaps that fall into this category and that cannot be included in any of the existing types of propeller flap: the STAAP (supratrochlear artery axial propeller) flap (Figure 1) and the DLAAP (deep lingual artery axial pro- peller) flap (Figure 2). These two flaps do reach, as shown in Figures 1 and 2, the recipient site through an axial rotation. However, their pedicle is neither subcutaneous nor perforator. They aren't supercharged and thus they do not fit in any of the types described in the Tokyo consensus based on the flap pedicle. The pedicle is indeed an axial, known vessel but the flap cannot be simply identified as axial flaps, since their pedicle enters the flap perpendic- ularly: as a result, they are harvested and transferred as propeller flaps and they perfectly fit the definition of propeller flap because they reach their recipient site through an axial rotation, their axis being a known axial pedicle.

For all these reason we believe that a new category of propeller flaps could be added to the Tokyo classification, in order to include this new type of propeller flaps, which combine the mobility of a propeller flap with the reliability of an axial flap. We would call it “axial pedicled propeller flaps”.

The types of propeller flap based on the vascular pedicle will thus become 4 as follows:

1. subcutaneous pedicled propeller flap; 2. perforator pedicled propeller flap;
3. supercharged propeller flap;
4. Axial pedicled propeller flaps.

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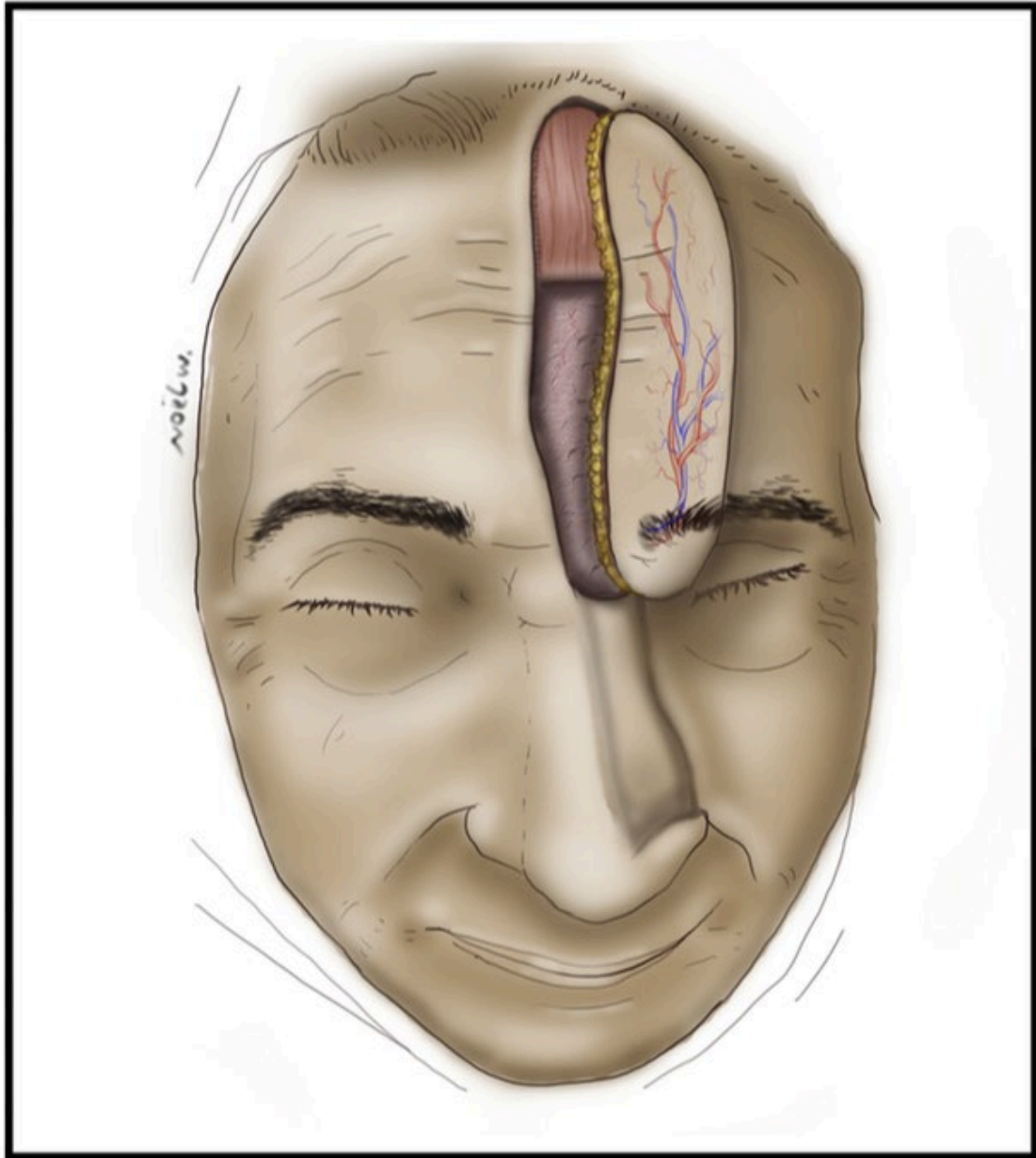


Figure 1 Schematic drawing of the STAAP flap. The flap is very similar to a forehead flap, but it is islanded and the pedicle is freed from the surrounding tissue. Although it is not a perforator by definition, since it comes out of the bone to enter the flap, it enters the flap perpendicularly. The pedicle itself is the pivot for the axial rotation that the flap undergoes to reach the recipient site. This movement defines the flap as a propeller. The vessels then runs axially inside the flap towards its tip: an axial pedicled propeller flap.

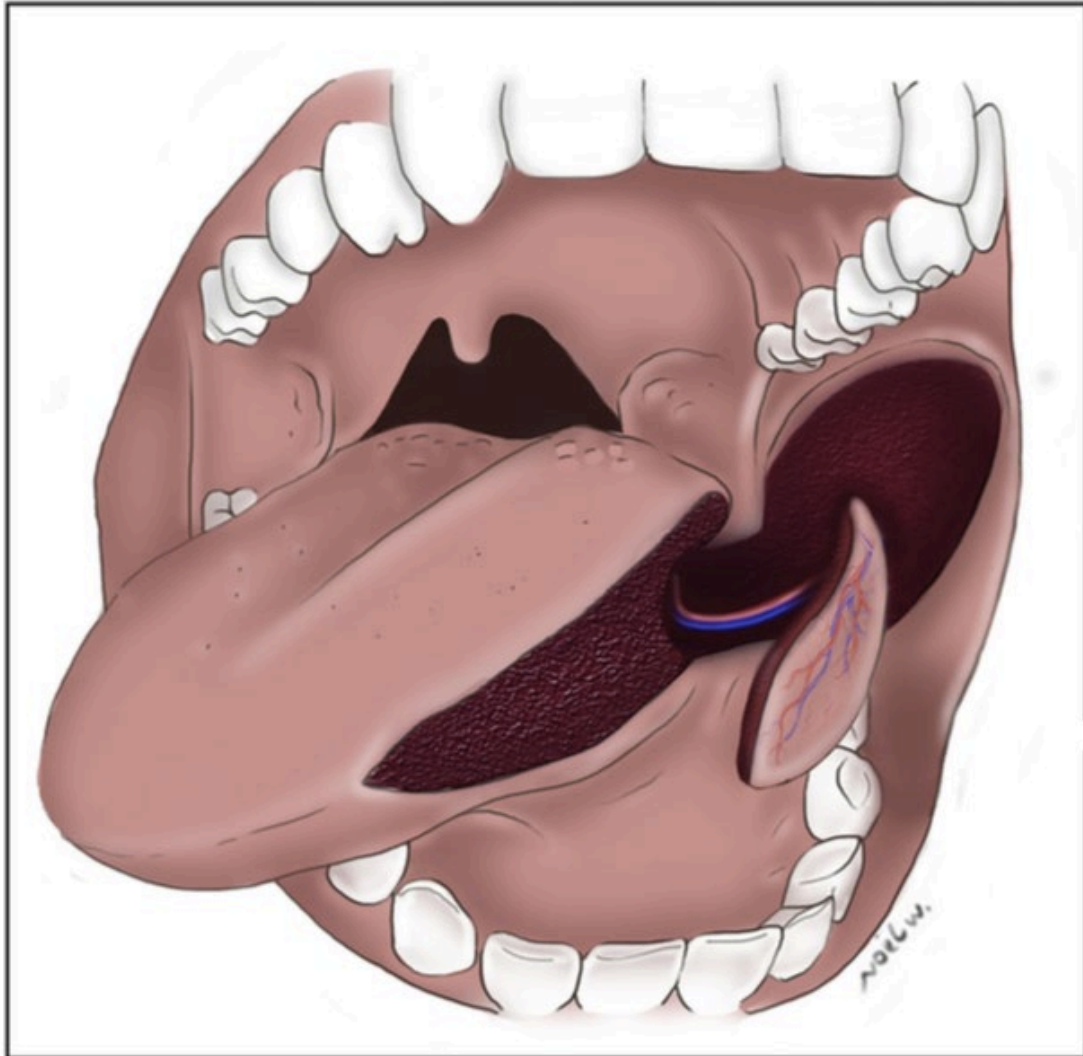


Figure 2 Schematic drawing of the DLAAP flap. The flap is raised with an approximate thickness of 6 mm and isolated on the deep lingual artery and venae comitantes, dissected through the genioglossus and the hyoglossus muscles. The vessels do enter the island mucosal flap perpendicularly. A cheek mucosal defect is outlined. The flap rotates axially around its pivot, made of the deep lingual pedicle, to reach the recipient site, which defines it as a propeller. The pedicle enters the flap and then runs axially towards the tip: it is an axial pedicled propeller flap.