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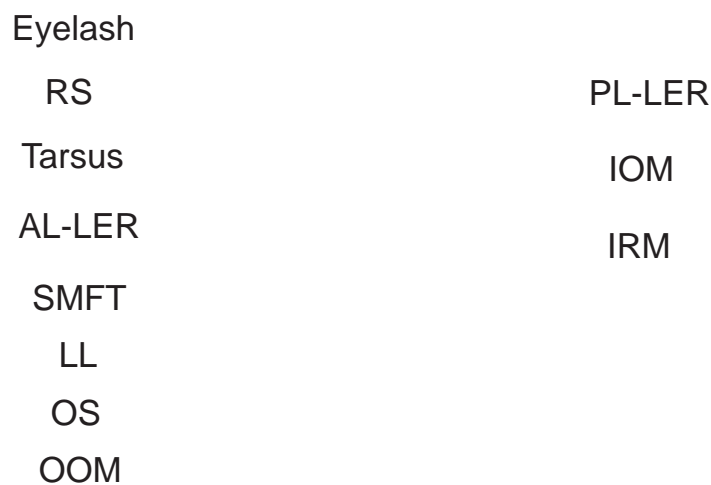
**Figure 2 A)** The same 3-year-old girl. Spine position during general anesthesia without downward traction of the skin. The eyelashes are directed toward the cornea. More redundant skin is observed in the lower eyelid than in the upright position (Figure 1A) and seems to have more influence of eyelash direction. **B)** Spine position during general anesthesia with downward traction of the skin. The direction of the eyelashes has not changed significantly compared with the upright position (Figure 1B).

or other anterior lamellar repositioning techniques,<sup>8</sup> could provide the best surgical outcome.

An absent lower eyelid skin crease in patients with epiblepharon was considered to have supportive evidence that the lower eyelid retractor fibers fail to reach the skin.<sup>2,9</sup> However, it should be remembered that most Asians have no lower eyelid skin crease,<sup>1,8</sup> even if the anterior layer fibers of the lower eyelid retractors reach the skin.<sup>6</sup> In addition, the fat in front of the lower eyelid retractors occupies the anterosuperior region of the lower eyelid, thus preventing the fibers from creating the lower eyelid skin crease.<sup>10</sup> It is

therefore not recommended to create a surgical lower lid crease during epiblepharon surgery in Asians.<sup>1</sup>

A weak attachment of the pretarsal orbicularis muscle and skin to the underlying tarsus, that was raising a skin fold near the eyelid margin and pushing the eyelashes toward the cornea, was also considered as a possible etiology of epiblepharon.<sup>3-5</sup> Our study found that redundant skin is only a possible aggravating factor and does not support this theory. When combining our findings and previous evidence that epiblepharon tends to improve with age,<sup>2,4,5</sup> it seems that removing any redundant skin during surgery is



**Figure 3** A diagram of epiblepharon. The eyelash is always directed upright, irrespective of skin redundancy.  
**Abbreviations:** AL-LER, anterior layer of lower eyelid retractors; IOM, inferior oblique muscle; IRM, inferior rectus muscle; LL, Lockwood's ligament; OS, orbital septum; OOM, orbicularis oculi muscle; PL-LER, posterior layer of lower eyelid retractors; RS, redundant skin; SMFT, submuscular fibrous tissue.

not essential, and that surgery should focus on changing the eyelash direction. Excision of skin helps little in improving the eyelash position and may be prone to cause ectropion.

Hypertrophy of the orbicularis oculi muscle was also mentioned as a causative factor in epiblepharon,<sup>2-4</sup> however, this is not supported by any microscopic studies. Interestingly, hypertrophy of the orbicularis oculi muscle was also believed to cause congenital entropion,<sup>2,3,5</sup> but this theory was denied in the microscopic studies.<sup>11</sup> Based on the “hypertrophy” theory, it was recommended to remove orbicularis muscle in epiblepharon surgery,<sup>1,8</sup> but there is no evidence to justify debulking this muscle, unless it is required to allow effective rolling out of the eyelashes.<sup>8</sup>

In conclusion, we found that the direction of lower eyelashes in patients diagnosed with epiblepharon and significant ocular irritation, with or without keratitis, was less influenced by lower eyelid skin redundancy than previously considered. The redundant skin is only a possible aggravating factor to epiblepharon.

## Disclosure

The authors report no financial support and no financial interest related to this manuscript.

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