Three-wall Orbital Decompression in Thyroid Ophthalmopathy: Is it the Ideal Choice?

Tiroid Oftalmopatide Üç Duvar Orbital Dekompresyonu: İdeal Bir Seçim mi?

Hakan Ağır, Eda Işıl*, David Glasson**

Department of Plastic and Reconstructive Surgery, Kocaeli University Faculty of Medicine, Kocaeli, Turkey
*Department of Plastic and Reconstructive Surgery, Kocaeli University Faculty of Medicine, Kocaeli, Turkey
**Wellington Regional Plastic, Maxillofacial and Burns Unit, Lower Hutt Hospital, Wellington, N. Zealand

Abstract
Thyroid Ophthalmopathy is an autoimmune endocrine pathology characterized with retraction of the eyelids, diffuse infiltration of the extraocular muscles, restriction of eye motility and exophthalmos. Orbital decompression surgery can be recommended when there is progressive proptosis, severe keratopathy, persistent retro-orbital pain, optic neuropathy, compression of the optic nerve and/or serious disturbance in facial appearance. In this short correspondence we are reporting our experience of eight patients on whom we operated with the three-wall orbital decompression technique. All of the patients presented with severe eyelid retraction, proptosis, extra-ocular muscle involvement, keratopathy and cosmetic deformity. At post-operative six-month control of the patients, proptosis was calculated to improve by a mean of 6.2mm. Although no major complications were encountered in the early postoperative period, 6 to 12 months after the procedure, six of the patients had to be re-operated by the ophthalmologist due to their persistent diplopia and unfavorable eyelid problems.

Three-wall orbital decompression surgery is very effective particularly in advanced cases of thyroid ophthalmopathy, however potential adverse ocular effects still present a problem. Turk Jem 2007; 11: 129-31

Key words: Thyroid ophthalmopathy, orbital decompression surgery, exophthalmos

Sir,
Thyroid Ophthalmopathy is an autoimmune endocrine pathology characterized with retraction of the eyelids, diffuse infiltration of the extraocular muscles, restriction of eye motility and exophthalmos. Among those findings, particularly progressive exophthalmos may lead to severe psychosocial problems, especially in middle-aged women due to its disturbing changes in periorbital area. Therapy is mainly medical in form of artificial tears and topical and systemic steroids (1). However, the endocrinologist and ophthalmologist can recommend orbital decompression surgery when there is progressive proptosis, severe keratopathy, persistent retro-orbital pain, optic neuropathy, compression of the optic nerve and/or serious

Address for Correspondence: Hakan Ağır, 1Kocaeli University Medical Faculty, Plastic and Reconstructive Surgery, Kocaeli, Turkey
E-mail: agirhakan@yahoo.com
disturbance in facial appearance(1). With this procedure, the medi-
al, lateral, and/or the inferior walls of the orbit are either fractured
outwards or removed, in order to enlarge the orbital capacity (2). As
one of the earlier well-described techniques, three-wall orbital
decompression via coronal approach yields safe and effective
results in advanced cases of proptosis (3,4).

Here in this brief correspondence, we report our outcomes in 8
advanced cases of thyroid ophthalmopathy surgically treated with
three-wall orbital decompression. Patients age ranged between
42 and 72 years (mean 48 yrs) and among them were seven
female and one male. All of the patients were referred with severe
clinical findings of eyelid retraction, proptosis, extra ocular muscle
involvement, keratopathy and cosmetic deformity. Three of the
patients had diplopia and restricted ocular motility whereas two
cases had partial visual loss. Hexel Ophthalmometer measure-
ment showed a mean proptosis figure of 26.7mm changing from
24 to 30mm. Fourteen three-wall orbital decompression via coro-
nal approach were undertaken in two unilaterally and six bilater-
ally involved patients. Multidisciplinary follow-up of the patients
ranged between 12 months and 8 years (mean 4 yrs). At post-
operative six-month control of the patients, proptosis was calcu-
lated to improve by a mean of 6.2mm, which changed from 5mm
to 7mm. While two patients recovered from their initial partial visu-
al losses, patients with diplopia failed to show improvement. On
the other hand, three of the patients (37.5%) presented with new-
onset diplopia (Figure 1a&b). Six of the patients stated that they
were satisfied with the end result (2a&b). No major complication
was encountered in the early postoperative period. Of note, six of
the patients (75%) had to be re-operated 6 to12 months after the
three-wall orbital decompression procedure by the ophthalmolo-
gist due to their persistent diplopia and unfavorable eyelid prob-
lems (Figure 3a, b&c). Additionally, one of the patients developed
a frontal branch facial paralysis recovered in 3 weeks and two
other cases had persistent minor asymmetry.

In the comprehensive management of Thyroid Ophthalmopathy
three-wall orbital decompression is an effective method not only to
improve the cosmetic appearance of the patients but also to
lessen the ocular problems. In our opinion, although more sophis-
ticated and less morbid, balanced surgical techniques continue to
be described, the surgical decompression is still not a physiologi-
cal intervention and the resulting new-onset diplopia and perioc-
ular problems always present a challenge. In various reports,
postoperative diplopia rate has changed from 0% to 64% with dif-
ferent surgical techniques (5-7). In those studies, a variety of caus-
es have been proposed as a possible mechanism which is out of
scope of this brief communication (1,2,5-7).

In our series new-onset diplopia rate is seemingly higher than
other large series, which we think is a result of severe proptosis
and diffuse extraocular muscle involvement in our patients. In
other way, our rate reflects the figures in advanced cases. In such
cases, intra-orbital fat removal and balanced two-wall decom-
pression might be an alternative solution to reduce relatively high
diplopia rates (5).

In summary, choosing the suitable surgical method for thyroid
ophthalmopathy should depend not only on the degree of the dis-
ease, but also on the level of experience, knowledge, and ability of

Figure 1. a- 46 years old female patient, exophthalmos caused by bilateral thyroid ophthalmopathy, pre-operative appearance  b- Late post-operative appear-
ance, diplopia is present with up-wards gaze
the surgical team, and also on the possibility of performing additional surgery and of providing necessary medical treatment. Although three-wall orbital decompression has been one of the most successful procedures for diminishing severe proptosis, in our hands, it caused extraocular motility problems. In our belief, ideal way should be to perform the surgical procedure, which through comprehensive prospective studies was found to be the most successful method of decompression, simultaneously combined with the required ocular surgery and the medical treatment. Thus, reexamination of the patients 6-8 months post-operatively is of paramount importance in order to identify residual diplopia and eyelid problems as noted before (6,7). Patients should be fully assessed preoperatively together with an experienced eye surgeon and endocrinologist at a multidisciplinary meeting and surgical planning should be made in collaboration.

Figure 2. a- 58 years old female patient, bilateral exophthalmos and diplopia are present, pre-operative appearance. b- Late post-operative appearance, diplopia showed no improvement.

Figure 3. a- 60 years old female patient, unilateral thyroid ophthalmopathy, diplopia is present, pre-operative appearance. b- Orbital CT Scan, diffuse infiltration of the medial rectus muscle of the involved side. c- Late post-operative appearance, diplopia and hypoglobus persists.

References