The ‘G-Series’

**MOLTENO®**

GS - 175mm²  GL - 230mm²  **Glaucma Drainage Device**

Single plate simplicity

Double plate performance

Single quadrant surgery

Unique primary drainage area
- Immediate or delayed drainage
- Enhanced ‘biological valve’
- Staged bleb development
- Large, permeable bleb capsule

Excellent long-term control of IOP

Molteno® implants
- the only glaucoma drainage devices followed prospectively for over 35 years
- the long term solution for severe and complex glaucomas

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Molteno3® Implant Development

The design of the Molteno3 implant is based on the tube and plate principle pioneered by Professor Anthony Molteno in the 1970’s and shown to be the most effective treatment for severe and complex cases of glaucoma that do not respond to hypotensive medication.

Molteno implants also provide better long-term control of intraocular pressure (IOP) in cases of primary open angle glaucoma when compared to trabeculectomy.

Made from the same proven materials, Molteno3 implants differ from earlier models in that they have a single, thinner, more flexible episcleral plate, the height of the outer ridge has been reduced, and the subsidiary ridge has been modified to form an elliptical primary drainage area. The upper surfaces of Molteno3 implants are divided into a small primary drainage area (<25mm2) and a large secondary drainage area.

The Molteno3 design has major advantages:

Single quadrant surgery
Involving only one quadrant, the Molteno3 implant sits snugly between and slightly beneath the adjacent extraocular muscles.

Immediate or Delayed drainage
Except when emergency IOP reduction is required, the implant tube should be occluded with an absorbable suture (eg 5.0 braided polyglactin). For cases requiring immediate drainage, a small modification to the surgical technique enhances the function of the ‘Biological Valve’ to reduce hypotony and optimise bleb structure.

Enhanced action of the ‘Biological Valve’
The primary drainage area of the Molteno3 implant, when covered by Tenon’s tissue, forms a self cleaning ‘biological valve’ which resists blockage by cellular ingrowth, blood clot or cellular debris.

The ‘biological valve’ reduces hypotony by confining the aqueous to the small primary drainage area until the IOP rises.

Staged Bleb Development
At the onset of drainage, aqueous is restricted to the small primary drainage area (Fig 1) Collagen is laid down in the overlying conjunctival tissue, the IOP rises and apoptosis (a fibrodegenerative response) begins in the innermost layers of the primary bleb capsule. When the IOP rises further, the tissues lift off the primary drainage area and aqueous, containing pro-apoptotic factors, flows into the large secondary drainage area (Fig 2). Collagen deposition in the secondary drainage area is limited by the pro-apoptotic factors already present in the aqueous. A dynamic equilibrium between fibrotic deposition of collagen and apoptotic breakdown of collagen is established early in the secondary bleb capsule, resulting in a naturally thinner, robust, more permeable bleb capsule without the need for antimetabolites. Staged development of the bleb capsule leads to excellent control of IOP and less need for hypotensive medication over the long term.

Results
Molteno3 implant results have been impressive. When the outcomes of all non-neovascular glaucoma cases implanted with the first Molteno3 implants (n=258) were compared to cases who received Molteno double plate implants (n=402), the IOP was consistently lower in the Molteno3 group. The results are summarised in the graph below.

Technical Information

### GS-175
- Surface area of plate: 230mm
- Plate thickness: 0.40mm
- Maximum plate length: 14.2mm
- Maximum plate width: 13.6mm
- Ridge height: 0.75mm
- Translimbal tube length: 17.0mm
- Tube internal diameter: 0.34mm
- Tube external diameter: 0.64mm

### GL-230
- Surface area of plate: 230mm
- Plate thickness: 0.40mm
- Maximum plate length: 16.0mm
- Maximum plate width: 15.0mm
- Ridge height: 0.75mm
- Translimbal tube length: 19.0mm
- Tube internal diameter: 0.34mm
- Tube external diameter: 0.64mm

### References

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