retinopathy, congenital heart disease, hearing impairment or an infant with one of the findings listed above and one of the following findings: purpura, splenomegaly, microcephaly, mental retardation, meningoencephalitis, radiolucent bone disease or neonatal jaundice. A laboratory-confirmed case is an infant with clinically confirmed CRS who has rubella-specific IgM antibodies in their blood.

The Aravind Eye Hospital in Madurai, India has developed community-based screening for ocular signs as a means of identifying suspected cases of CRS. In this issue of the BJO, Vijayalakshmi and co-workers¹⁴ report screening of over 50 000 children for CRS (see page 1467). Nearly 2% of the children screened had ocular signs suggestive of CRS, and 27% of the children with suspected CRS were later found to have clinically confirmed CRS. They report that a cataract had the highest sensitivity (73%) for detecting CRS, and pigmentary retinopathy and iris hypoplasia had the higher specificity for CRS. Tragically, only 6 of the nearly 992 mothers of children with suspected CRS had been vaccinated against rubella. Clearly, CRS is still an enormous public health problem in India.

The WHO has proposed three stages to eliminate CRS from countries lacking rubella vaccination programmes.¹⁵ The first stage is to investigate rubella outbreaks, to assess the number of CRS cases per year for at least 2 years, and to assess the proportion of women at risk for

rubella during pregnancy. The second stage is to begin a national rubella immunisation programme, to report data on suspected rubella cases on a monthly basis and to investigate each suspected case of CRS. The third stage is to investigate and report every case of a febrile rash illness within 48 h. Hopefully, as developing countries find the necessary resources to initiate effective rubella vaccination programmes in the near future, the scourge of blindness and deafness arising from CRS can be eradicated from this planet.¹⁵

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Cionni capsular tension ring implantation in Marfan's syndrome

Cionni capsular tension ring implantation in Marfan's syndrome

Thomas S Dietlein

Progress is being made in dealing with Marfan's syndrome, but careful surgical planning decisions are still necessary

Safe positioning of an intraocular lens (IOL) after lentectomy in hereditary ectopia lentis has been achieved by various techniques including iris fixation by clipping or suturing, anterior chamber IOL with chamber-angle support and transscleral suturing of a posterior chamber IOL. None of these approaches requires preservation of the capsular bag, and they are regularly combined

with an anterior vitrectomy. However, the loss of separation between the anterior and posterior compartment of the eye may make a key contribution to subsequent complications such as retinal detachment, macular oedema or even glaucoma. From an anatomical point of view, the surgical approach proposed by Cionni *et al*^{1,2} and now studied by Bahar *et al*³ (see page 1477), in a series of adult

patients with hereditary lens subluxation owing to Marfan's syndrome, would seem to represent progress compared with traditional lentectomy with anterior vitrectomy and implantation of an anterior chamber lens. The implantation of the IOL in the transsclerally fixated capsular bag does not compromise the endothelial cell count over the years and should also cause less chronic anterior chamber irritation than is induced by the different anterior chamber IOLs. The preservation of an anterior and posterior compartment should also reduce the probability of retinal problems and make any subsequent glaucoma or vitreoretinal interventions easier, although naturally no sufficiently valid long-term data are available as yet.

However, some limitations of this very demanding surgical approach should be borne in mind by the interested cataract surgeon. In Marfan's syndrome, the anterior continuous curvilinear capsulorhexis may be complicated by the

extremely subluxated lens and an incomplete mydriasis, leading to a relatively small and excentric capsulorhexis. Additionally, damage to the capsular bag may occur when iris hooks are used to stabilise the capsular bag position or during suturing of the tension ring or other surgical manoeuvres.^{4,5} Any tearing or notching of the anterior continuous curvilinear capsulorhexis or defect in the capsular bag should be primarily considered as a contraindication for the relatively rigid capsular tension ring made of polymethyl methacrylate, because rupture of the whole capsular bag can be induced during or after implantation of the tension ring owing to the strong mechanical forces acting on the capsular bag. Especially in young children with Marfan's syndrome, who were not the focus of Bahar *et al's* study, there is the added problem that the Cionni ring, with its fixed size and rigidity, may not fit a malformed or even colobomatous infantile lens, thus increasing the risk of accidental rupture of the capsular bag during surgical manoeuvres. A valuable surgical alternative in these cases could be the use of differently sized capsular tension ring segments with fixation eyelets, as proposed by Hasaneer and co-workers.⁶ This approach simplifies

implantation while minimising mechanical stresses on the capsular bag and the loosened zonulae. Regardless of the devices used, the correct placement and suturing of the fixation eyelets requires an intact and sufficiently large anterior capsulorhexis, a very experienced surgeon and sufficient patience for a relatively time-consuming procedure compared with conventional IOL implantation. It should also be noted that little is known about possible long-term problems with the non-resorbable suture securing the Cionni ring—or, for that matter, with sclerally sutured IOLs—in young patients. Theoretically, the lifetime of these sutures should be long enough, but Cionni and co-workers have reported an incidence of nearly 10% for broken sutures after a median follow-up of 18 months, leading to their recommendation that sutures stronger than Prolene 10-0 be used.² In practice, even Prolene sutures well buried in the sclera can become visible after years and can even cause conjunctival erosion and possible suture-induced infection.

With so many questions remaining unanswered, we have to acknowledge that many options—even visual rehabilitation with contact lenses or glasses rather than IOL⁷—can produce satisfactory long-term results after lensectomy in hereditary lens

subluxation, and we would recommend that decisions on surgical planning be made on an individual basis.

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page 1490). Their study showed that ASOCT could measure the anterior chamber angle with a high intra- and inter-session repeatability/reproducibility (intraclass correlation coefficient 0.95–0.98 for intra-session and 0.89–0.95 for inter-session). In comparison with the modest UBM angle-measurement reproducibility,^{2–5} these results were impressive.

However, Li *et al* chose only two angle parameters for their study: the angle opening distance and the trabecular-iris angle introduced by Pavlin *et al*.⁶ Both parameters are notorious for their dependency upon variable iris surface undulation. Ishikawa *et al* proposed angle recess area or ARA to overcome these parameters' shortcomings,⁷ and later Radhakrishnan *et al* introduced a modified version, the trabecular-iris space area (TISA), specifically for ASOCT images.⁸ The basic idea behind these parameters is to measure an area where the aqueous contacts the trabecular meshwork, which is less influenced by variable iris surface curvature. Since many reports dealing with quantitative anterior chamber angle assessment using either ASOCT or UBM used both angle

Anterior segment imaging for glaucoma

Anterior segment imaging for glaucoma: OCT or UBM?

Hiroshi Ishikawa

Ultrasound biomicroscopy and anterior segment optical coherence tomography both have their own pros and cons in imaging

Ultrasound biomicroscopy (UBM) had played the dominant role in objective imaging of the anterior chamber angle until anterior segment optical coherence tomography (ASOCT) was introduced in 2003. Although ASOCT provides a higher axial resolution (18 µm in commercial ASOCT device vs. 25 µm in 50 MHz UBM), this is not ASOCT's major advantage. The true advantage of ASOCT is its non-contact scanning method that is performed in the sitting position, whereas UBM requires a plastic or silicone eyecup to hold a coupling medium (methyl cellulose or saline solution), which

requires supine position scanning. Therefore, when it comes to patients' compliance and comfort in daily clinical settings, ASOCT is a clear winner. However, from the clinicians' viewpoint, the first and most important question is whether ASOCT provides clinically useful information like that which made UBM famous and popular (eg, angle opening distance, angle recess area, trabecular-iris angle, etc).

Li *et al's*¹ study to investigate the repeatability and reproducibility of anterior chamber angle measurements using ASOCT answers part of this question (*see*