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Title: Pedicle Omentopexy for restoring vision
In retinal ischaemic blindness

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Abstract: The blood vessels of the retina being end arteries are uniquely susceptible to diseases like retinitis pigmentosa, and macular degeneration. In spite of available treatment and research these patients constantly lose vision as world has no treatment.

We utilized angiogenic property of omentum , based on our long term clinical experience of revascularising limbs and experimental evidence of vascular connections developing between the omentum and intraocular vascular channels. Pedicle omental transplant in eyes done This procedure resulted in retinal revascularisation. Average improvement in cases having vision 6/18 and more ,was 6/9 to 6/6,and field of vision from 10 to 12 degrees in 12 weeks

Agarwal technique of pedicle omental transplant to the eye, mechanism of action and results are discussed.

Pedicle Omentopexy for restoring vision

In retinal ischaemic blindness

Eye is a special organ, diseases of eye ultimately leads to blindness. Broadly it has two chambers. Anterior consisting of Cornea and lens of which treatment is well established while in Posterior chamber ischaemic disease leads to degeneration of Retinal epithelium, converting rods and cones in bony corpuscles in diseases like retinitis Pigmentosa (RP), Age related Macular degeneration (ARMD) Optic Atrophy etc. There is no medical treatment of these diseases and ophthalmologist helplessly sees them going blind. As reported by Heckenlively JR¹ in his book on RP. ‘Treatment of RP is currently not available’. While Colomon DJ² remarks ARMD will be the leading cause of blindness in U.S.A.

From long time research is going on in several countries to revascularise retina, including development of artificial retinal chip Humayun et al.³, but none have succeeded.

There are many such situation where direct revascularisation is not feasible and surgeon feel hopeless losing tissue and organ. The greater Omentum is known for its angiogenic property due to the presence of mesenchymal stem cells and vascular endothelial growth factor. We utilized this angiogenic property of omentum and developed a technique to lengthen it in continuity (Agarwal technique) achieving 85% limb salvage in over 800 limbs in 15 years follow up⁴

As the retinal artery course is intra cranial direct reconstructive (retinal artery by pass) is not feasible. So we explored the possibility of extending Agarwal technique of pedicle Omental transplant in eye.

Goldsmith H. et al.⁵ in an experimental study demonstrated that intact omentum can be successfully transposed to the eye of the dog, with evidence of vascular connection developing between the omentum and intra ocular vascular channels.

With the experimental evidence and our 25 yrs. clinical experience in limb revascularization, we modified Agarwal technique and pedical omental transplant into eye was performed. Lengthen omentum is brought out of abdomen at Xiphi-sternum and subcutaneous tunnel is created on the chest, neck and mid fore head. (Fig. 3)

In eye conjunctiva is reflected and a tunnel is made sub-conjunctively to the fore-head incision in both the eyes. Through these tunnels strips of omentum are pulled and pushed posterior in the eye ball. No anastomosis is made between eye vessels and omentum.

This procedure resulted in retinal revascularization, as the omental vessels encouraged development of new capillaries which cross anastomosed between omental and posterior short ciliary's, which in turn filled choroidal vessels of retina retrograde

Mechanism of action

Vineberg A, Lwin MM⁶ demonstrated omentum capillaries biologically anastomosis with host capillaries in three days. Here omental strips throws capillaries to anastomose with short posterior ciliary outside the sclera. These in natural course pierce sclera near Lambina- cirbraso, retrograde fills retinal and choroidal vessels.

Visual acuity improved in 12 weeks from pre operative 6/18 to 6/6 post-operatively. And field of vision from 10 to 12 degrees Colour Doppler study revealed increase in number of vessels and blood flow and Indo Cyanine Green (ICG) angiograms showed hyper fluorescence showing increased choroidal vessel flow. (Fig.1, 2)

In 2 yrs. 85 cases were operated. Follow up showed further deterioration of vision was checked in all cases. Visual acuity increased in cases who had vision up to 2/60, (blind as per WHO) As we are pioneer in omental transplant in eye we feel it will prove to be break through in medical science.

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Legends to Figure

- Figure 1** Pre-operative I.C.G. angiogram; Showing narrowing of retinal arterioles with pale disc.
- Figure 2** Post-operative I.C.G. angiogram after 3 months; Showing hyper fluorescence indicating marked increase choroidal vessels flow.
- Figure 3** Diagrammatic representation of transplantation of omental pedicle from abdomen to eye.

Figure 1
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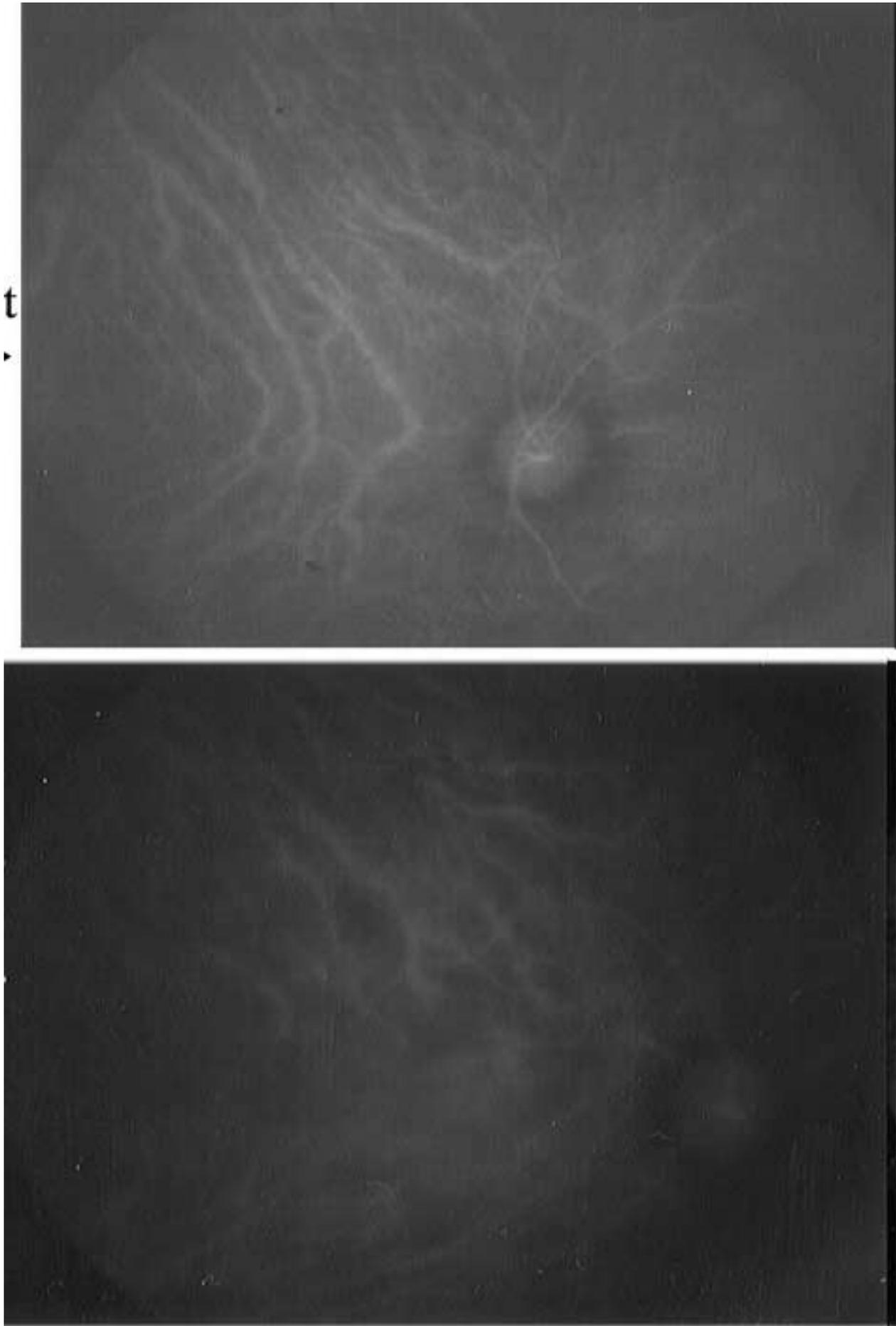


Figure 2
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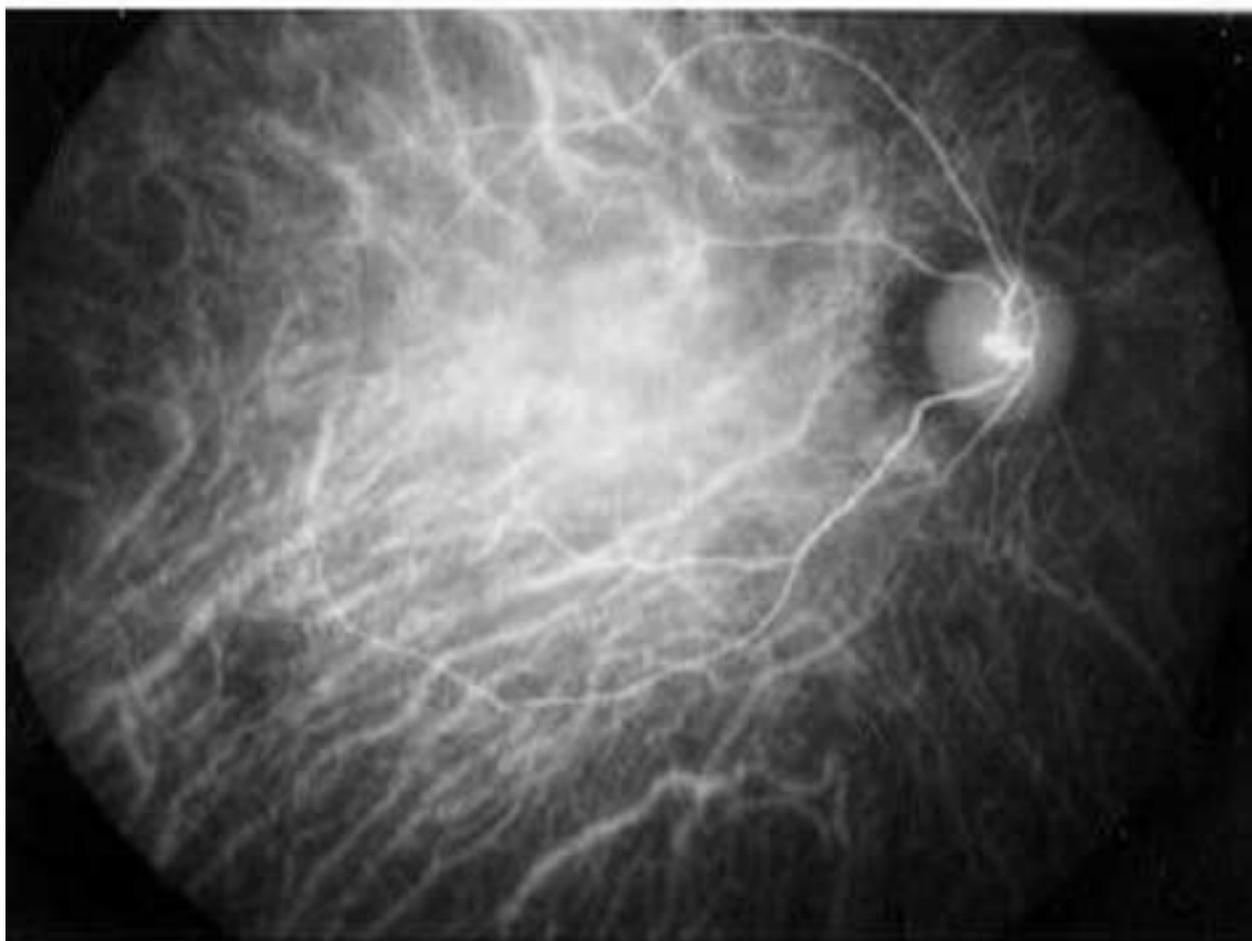
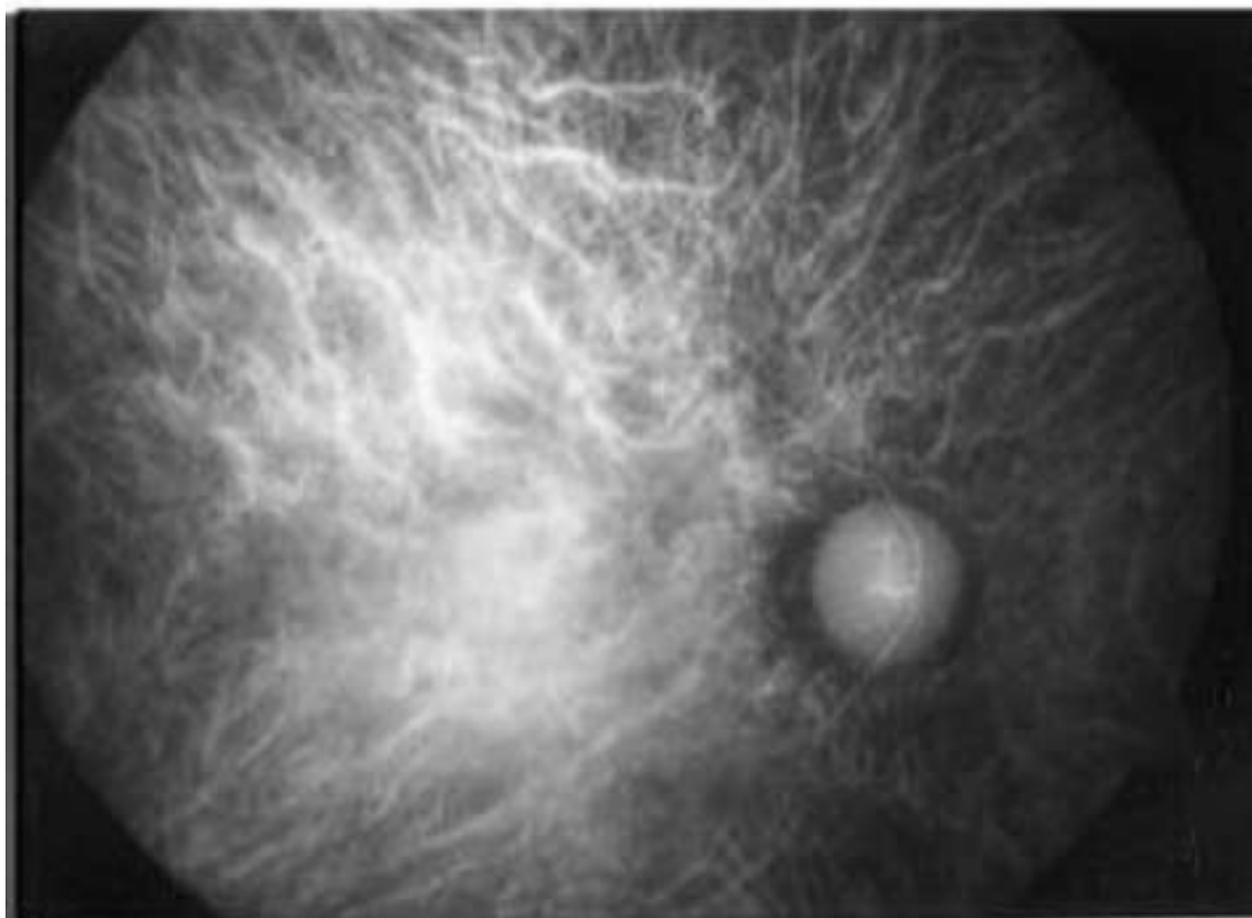


Figure 3
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