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Sutureless Vitrectomy – How Useful it is in Present Era?

Dr. Subhendu Kumar Boral, Dr. Arnab Das, Dr. Tushar Kanti Sinha, Dr. Santanu Mandal, Dr. Debdulal Chakraborty

Sutureless self-sealing sclerotomies for pars plana vitrectomy were first described by Chen[1] in 1996. Transconjunctival sutureless vitrectomy, developed by Fujii et al[2,3] is one of the most innovative vitreoretinal surgery techniques introduced in recent years. 23 gauge transconjunctival vitrectomy is based on the concept of 25 gauge transconjunctival sutureless vitrectomy. It was developed to improve the reported short comings of 25 gauge vitrectomy versus conventional 20 gauge vitrectomy, such as high flexibility of the instruments, the occasional post-op hypotony and the poor efficiency of the instruments. In 23 G vitrectomy technique, pioneered by Eckardt, a sclerotomy created with an oblique incision at angle of 30 to 45 degrees to obtain a sclera tunnel with self-sealing wound recovery.

Now-a-days 23 G vitrectomy is the 'New Standard' of surgery. But, in Indian scenario, it's justification has to be re-evaluated. Preoperatively, prior commitment of sutureless aspect of the vitreoretinal surgery often creates dialema which may affects the prognosis. Our aim was to asses the usefulness of sutureless vitrectomy in present era.

Materials & Methods

All surgeries were performed in Disha Eye Hospital, Barrackpore, W.B in between July 2007 to February 2008. The cases were selected with a predictable surgical time less than 90 minutes, and were divided into two groups- Group-I (all cases done by sutureless 23G vitrectomy) and Group-II (all cases done by 20G vitrectomy). In each group, 24 cases were included. In Group I, a tunnel-like tangential incision was made at a 30 degree angle through sclera and in Group II, the conventional right-angled incision was made through sclera. We followed up all cases for at least 3 months.

Address for correspondence :
Dr. Subhendu Kumar Boral,
Disha Eye Hospitals & Research Centre, Barrackpore, Kolkata-700120, West Bengal
E-mail:disha@cal2.vsnl.net.in

Included Cases

- Vitreous haemorrhage (post BRVO, diabetic, Eales' disease, traumatic)
- Diabetic macular TRD, central combined RD.
- Vitreo macular traction
- Epimacular membrane
- Full thickness macular hole
- Rhegmatogenous RD with PVR $\leq D_1$
- Dropped cortex, epinucleus
- Silicone oil removal

Excluded Cases

- Complicated PDR
- RD with advanced PVR ($>D_1$), anterior PVR
- Dropped nucleus
- Cases with RIOFBs

Parameters Evaluated:

Per operative
- Surgical time
- Suture placement at ports (single, two, three) to close leaks.
- 360^0 opening of conjunctiva for encirclage

Post operative
- External quiet appearance
- Significant ocular discomfort / pain/ irritation
- First post- op day IOP (to note hypotony,i.e IOP <8mm. Hg)
- Anterior chamber reaction.
- Post-op recovery

Results:

	Group-I (n=24)	Group-II (n=24)
Mean surgical time-	52.8 ±15.02 min (Range 30 – 80)	66±18.60 min (Range 40 – 90)
Suture placement at ports	3	all 24
Opening of conjunctiva for encirclage	2	6
External quiet appearance	20	5
Significant pain/discomfort	2	15
Hypotony	4	1
Anterior chamber reaction (≥2+)	4	10
Post-operative recovery	4 weeks	6 weeks
Post-op retinal detachment	0	1
Endophthalmitis	0	0
Choroidal detachment	0	0

In group-I, superotemporal ports had been sutured in 3 cases because of conversion to 20 G due to use of phacofragmentor in one case and to inject silicone oil in other two cases.

In group I, encirclage had to be put in 2 eyes, as peroperatively retinal tear from inferior lattice, occurred in one case and inferior relaxing retinotomy had to be performed in another.

Out of the all 24 cases in Group I , the postoperative profile of these 5 cases, which had been converted to put sutures, separately were as follows:

External quiet appearance	4
Significant pain/discomfort	2(with encirclage)
Hypotony	0
Anterior chamber reaction(≥2+)	1
Post-operative recovery	4 weeks

Cases where first postoperative day IOP were less than 8 mm Hg, were self-recovered within two weeks.

Discussion

Sclerotomies in 25 G vitrectomy requires no suturing because they are only 0.5 mm in diameter compared with the 0.9 mm width of the sclerotomies in conventional 20 G vitrectomy.Although the difference in diameter between 25 G and 23G (0.6mm) is only 0.1 mm, the sutureless 23 G vitrectomy procedure appears to be a viable alternative to 25 G vitrectomy. It offers all the advantages of the minimally invasive transconjunctival vitrectomy system developed by Fuji et al[2,3], plus the benefits of a sturdier and larger instrumentation.

We excluded advanced PDR and RD with advanced PVR (>D1) cases as these cases needs more surgical manipulation and varieties of instrumentation for which 23 G approach was not a viable option.

Conventional sclerotomies are always accompanied by temporary postoperative astigmatism, whereas tunnel incisions rarely give rise to astigmatism and lead only to a slight postoperative inflammation. Thus postoperative recovery was earlier in 23G group.

Incidence of hypotony on first postoperative day was 16.67% in Group I in our study; this was almost similar to the study done by Mehmet CITRIK et al[4], where 15% eyes developed hypotony on postoperative day-1.

None of the eyes developed endophthalmitis in our study. This finding was also similar to the study done by Mehmet CITIRIK et al[4].

Postoperative discomfort,pain,irritation are suture related problems. In sutureless vitrectomy, these problems were absent. But out of five converted cases, these symptoms arised in 2 cases, where encirclage had to be placed. But in other 3 cases, where one port had to be sutured, these symptoms were minimal or absent. The postoperative courses of these five converted cases were nearly same as of other cases of Group-I. Thus preoperatively, all patients should be explained regarding the benefits of sutureless vitreoretinal surgeries, but peroperatively should not be stuck to the sutureless part of the scenario compromising the prognosis, rather it should be as much minimally invasive as possible.

Conclusion

1. Sutureless vitrectomy technique has many advantages, but one should not compromise the prognosis by not putting sutures.
2. Preoperative counseling regarding modern VR surgery should highlight minimal invasiveness of these new techniques, rather than sutureless aspect of it.

References

1. Chen JC .Sutureless pars plana vitrectomy through self-sealing sclerotomies.Arch Ophthalmol 1996;114 :1273-1275.
2. Fuji GY,De Juan E Jr, Humayun MS et al. A new 25-gauge instrument system for transconjunctival sutureless vitrectomy surgery.Ophthalmolgy 2002;109:1807-1813.
3. Fuji GY ,De Juan e JR , Humayun MS et al .Initial experience using the transconjunctival sutureless vitrectomy system for vitreoretinal surgery.Ophthalmology 2002; 109:1814-1820.
4. Mehmet CITRIK, Cosar BATMAN, Tolga BICER, Solmaz OZALP,Orhan ZILELIOGLU et al. 23-Gauge transconjunctival Sutureless Pars Plana Vitrectomy. Journal of Retina-Vitreous 2008;16.

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