

The Use of Fibrin Glue in Pterygium Surgery with Amniotic Membrane Transplantation: A Systematic Review and Meta-Analysis

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Introduction:

Amniotic membrane transplantation (AMT) has been used in pterygium surgery instead of conjunctival autograft to reduce the rate of recurrence. This is the first meta-analysis to compare the outcomes of using fibrin glue versus sutures with AMT in pterygium surgery.

Methods:

This study was conducted as per the PRISMA guidelines. Five electronic databases were used to include all studies comparing use of fibrin glue versus sutures in pterygium surgery with AMT.

Results

Four RCTs enrolling 180 patients were identified.

Primary outcomes - Conjunctival inflammation:

A statistically significant less amount of conjunctival inflammation was seen in the fibrin glue group (OR = 0.21, CI = 0.08 to 0.50, P = 0.0005).

	Fibrin G	ilue	Sutur	es	Odds Ratio			Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI	Year	M-H, Fixed, 95% CI		
Kheirkhah 2008	3	14	8	13	29.7%	0.17 [0.03, 0.93]	2008			
Mahdy 2012	4	20	12	20	43.7%	0.17 [0.04, 0.69]	2012			
Nguyen 2012	3	24	6	19	26.7%	0.31 [0.07, 1.46]	2012			
Total (95% CI)		58		52	100.0%	0.21 [0.08, 0.50]		-		
Total events	10		26							
Heterogeneity: Chi²= 0.40, df= 2 (P = 0.82); l²= 0%										
Test for overall effect:	Z= 3.50 (P = 0.0	005)					0.05 0.2 1 5 20 Favours Fibrin Glue Favours Sutures		

Figure 1 – Forest plot of conjunctival inflammation

Post-operative discomfort:

There was no statistically significant difference seen in the odds ratio analyses between the two groups (OR= 0.46, CI= 0.12 to 1.73, P= 0.25).

	Fibrin G	ilue	Sutur	es		Odds Ratio		Odds Ratio			
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI	Year	M-H, Fixed, 95% CI			
Mahdy 2012	2	20	4	20	54.0%	0.44 [0.07, 2.76]	2012				
Nguyen 2012	2	24	3	19	46.0%	0.48 [0.07, 3.25]	2012				
Total (95% CI)		44		39	100.0%	0.46 [0.12, 1.73]					
Total events	4		7								
Heterogeneity: Chi ² = 0.00, df=1 (P = 0.95); i ² = 0%											
Test for overall effect:	Z=1.15 ((P = 0.2)	Favours Fibrin Glue Favours Sutures								

Figure 2 – Forest plot of post-operative discomfort

Pterygium recurrence:

There was no statistically significant difference seen in the odds ratio analyses

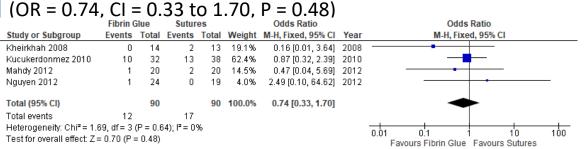


Figure 3 – Pterygium recurrence

Pyogenic granuloma:

There was no statistically significant difference seen in the odds ratio analyses (OR = 0.47, CI = 0.09 to 2.52, P = 0.38).

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Fibrin Glue				Sutur	es		Odds Ratio		Odds Ratio			
	Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI	Year	M-H, Fixed, 95% CI			
	Kheirkhah 2008	2	14	3	13	64.6%	0.56 [0.08, 4.01]	2008				
	Mahdy 2012	0	20	1	20	35.4%	0.32 [0.01, 8.26]	2012 —	•			
	Total (95% CI)		34		33	100.0%	0.47 [0.09, 2.52]					
	Total events	2		4								
	Heterogeneity: Chi ² =	0.08, df=	1 (P=	<u>⊢</u> 0.01	0.1 1 10 100							
	Test for overall effect:	Z = 0.88 (P = 0.3	8)	0.01	Favours Fibrin Glue Favours Sutures						

Figure 4 – Pyogenic granuloma

Surgical time:

There was no statistically significant difference seen in the mean difference analyses (MD = -17.52, CI = -39.96 to 4.92, P = 0.13).

		Fibrin Glue			Sutures			Mean Difference			Mean Difference
L	Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI	Year	IV, Random, 95% CI
ſ	Kheirkhah 2008	46.4	13.6	14	77	27.4	13	43.4%	-30.60 [-47.11, -14.09]	2008	
	Kucukerdonmez 2010	11.2	2.4	32	18.7	2.2	38	56.6%	-7.50 [-8.59, -6.41]	2010	•
	Total (95% CI)			46			51	100.0%	-17.52 [-39.96, 4.92]		
	Heterogeneity: Tau ² = 23	1.17; CI	hi = 7.	-20 -10 0 10 20							
Test for overall effect: Z = 1.53 (P = 0.13)											Favours Fibrin Glue Favours Sutures
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Secondary outcomes:

Fibrin glue had significantly less cases of graft loss compared with sutures. No statistically significant difference was found in amniotic membrane graft outcomes, time to recurrence and subconjunctival haemorrhage.

Conclusion:

Fibrin glue is comparable to the sutures used in the pterygium surgery with amniotic membrane transplantation. More studies are required to further support the findings of this study.