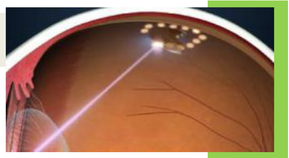


Evaluation and outcome of slit-lamp prophylactic Laser-Retinopexy for retinal tear in a District General Hospital in Wales



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Background

Almost a century ago Prof. Jules Gonin's pioneering work led to understanding of retinal tear leading to RRD in Switzerland. Untreated retinal tear leads to RRD up to 50% eyes regardless of location. Trans-scleral cautery could achieve closure of tear and prevent RRD by promoting adhesion between neuro sensory retina and RPE preventing migration of SRF. Further technical advancement leading to slit lamp delivered laser retinopexy to treat retinal break preventing subsequent RRD is achieved and since then being used to treat retinal break for decades.

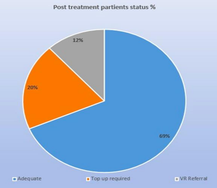
Purpose

Authors report an outcome of initial slit-lamp prophylactic laser-retinopexy to treat retinal tear with relation to number of breaks treated successfully at first instance, number of breaks needed subsequent additional laser photocoagulation, number of breaks needed vitreo-retinal surgical intervention, most frequent location of the tear and their demographic distribution in Ophthalmology unit of a DGH in Wales, United Kingdom.

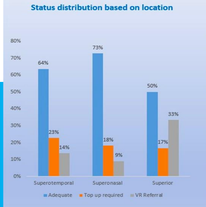
Keywords: Laser retinopexy, Retinal tear, Rhegmatogenous retinal detachment

Treatment outcome

Outcome	Patient cohort (n= 51)	Percentage
Primary adequate laser	35	69%
Repeat additional top up laser required	10	20%
VR Referral for surgery	6	12%
Grand Total	51	



Status distribution



Location	Primary Adequate	Additional Top up required	VR Referral	Total
Superotemporal	14	5	3	22
Superonasal	8	2	1	11
Superior	3	1	2	6
Temporal	4	1		5
Inferotemporal	3			3
Nasal	1	1		2
Inferonasal	1			1
Nasal and Superonasal	1			1

Location	Primary Adequate	Additional Top up required	VR Referral	Total
Superotemporal	64%	23%	14%	22
Superonasal	73%	18%	9%	11
Superior	50%	17%	33%	6
Temporal	80%	20%	0%	5
Inferotemporal	100%	0%	0%	3
Nasal	50%	50%	0%	2
Inferonasal	100%	0%	0%	1
Nasal and Superonasal	100%	0%	0%	1

Materials and Methods

Patient population

All patient who underwent slit lamp laser retinopexy for retinal tear in the Department of Ophthalmology, Royal Glamorgan Hospital from January 2020 to September 2021 were included in this study series, (n=51)

Data collection

Data retrieved from medical records included laterality and position of retinal tear, whether primary retinopexy was adequate, further repeat/additional top-up retinopexy required or referred to V-R surgical team for surgical intervention and their demographic variation

Statistical analysis

Data were recorded in Microsoft Office 365 Excel for graphical representation and at the end Proportion Hypothesis Test was done

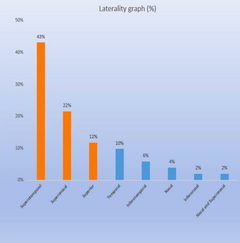
Results

- Primary laser-retinopexy was found to be adequate in 35 eyes (69%), out of 51*(=n)* of total treated eyes.
- Additional top-up retinopexy were performed in 10 eyes (20%).
- Vitreo-retinal procedures after initial retinopexy were performed in 6 eyes (12%).
- Most common location of retinal-tear was supero-temporal, of them, 64% were found to be adequate after initial retinopexy.
- Infero-temporal, supero-nasal and infero-nasal retinal-tear retinopexy found to be 100% adequate without necessitating any further vitreo-retinal surgical intervention.
- Patients were aged between 40 and 80.
- Female patients were found to have most adequate retinopexy at first instance.
- A Left-tailed-proportion-hypothesis test was done to validate authors' proposal of 68% of retinopexy would be adequate at first application, yielding *P-value*=0.54 (>Significance level *α*=0.005(0.5%)) where Null Hypothesis: H_0*: P=0.68,* Alternate Hypothesis: H_a*: P<0.68,* Sample size *(n)=51*, Number of success *(x)=35,* Proportion of success *(p̂)=0.68*, Proportion of failure *(q)=0.32* where decision rule was P-value>α meaning failure to reject Null Hypothesis.

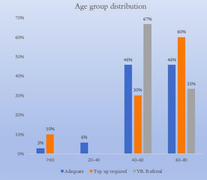
Results

Laterality

Locations	Number of Patients (Study cohort; n=51)	% of patients
Supero-temporal	22	43%
Superonasal	11	22%
Superior	6	12%
Temporal	5	10%
Inferotemporal	3	6%
Nasal	2	4%
Inferonasal	1	2%
Nasal and Superonasal	1	2%
Grand Total (n)	51	



Age distribution



Age group distribution					
Status	>80	20-40	40-60	60-80	Grand Total
Adequate	1	2	16	16	35
Top up required	1		3	6	10
VR Referral			4	2	6

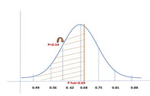
Status	>80	20-40	40-60	60-80	Grand Total
Adequate	3%	6%	46%	46%	35
Top up required	10%		30%	60%	10
VR Referral			67%	33%	6

Discussions

Performance figures from this study are keeping up with two other large international studies which is quite exemplary and commendable for a District General Hospital and the care provided to the patients in surrounding catchment area in rural Wales.

Statistical analysis

TEST	DISTRIBUTION
Author's proposal	
68% of retinal tear would be adequate treatment after first episode of laser retinopexy	
Statistical method: Left-tailed Proportion Hypothesis Test	
Null Hypothesis: H_0: P = 0.68	
Alternative Hypothesis: H_a: P< 0.68	
Significance level *(α)*: 0.005 (0.5%)	
Sample size *(n)* = 51 (Total eyes treated)	
Number of success *(x)* = 35 (Successful retinopexy in first instance)	
Proportion of success *(p̂)* = 0.68	
Proportion of failure *(q)* = 0.32	
P value in left tailed test = 0.54 > **α**	
Decision rule in ***P value***: Greater than **α** means fail to reject Null Hypothesis	



Comparison study

Garoon RB, et al:
Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, USA

- Cohort of 401*(n=401)* eyes were studied with age range 18-82 years
- Time range from 1 November 2013 to 30 November 2016
- Super-temporal tears required additional laser treatment or surgical intervention most commonly
- Additional to up laser were performed 18.7% eyes
- VR surgical intervention was performed in 7.2% eyes

Lankry P, et al
Department of Ophthalmology, Tel Aviv University, Israel

- Cohort of 307 (n=307) were studied with age range 18-83 years, with study period from 1 July 2014 to 31 December 2017
- Most common location was the supero-temporal quadrant.
- Overall, 40.3% eyes received additional top up laser treatment at some point during the follow-up
- Overall, 26.5% eyes underwent vitrectomy for progression to RD at some point during the follow-up.

Conclusions

Initial laser-retinopexy is adequate
and
Effective means of treatment
and
Preventive of Rhegmatogenous Retinal Detachment in vast majority of cases in our unit.
However, there is high rate of requirement of additional laser fill-in or vitreo-retinal surgical intervention.

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2. Authors declare no conflict of interest, financial grant or otherwise from public or commercial sector.
3. The retrospective study followed the Helsinki Declaration 1964 and its subsequent amendments or comparable ethical standards.