A Survey:Fundus Diagram; the untended dexterity.

Abstract

Purpose:

The objective of this survey was to evaluate how routinely and efficiently the skill of fundus drawing is practiced among retinal specialists.
Fundus drawing is an invariably accepted evidence worldwide for documenting various retinal pathologies.

Methods:

A self-administered online questionnaire was circulated among various ophthalmologists. Potential participants were vitreo retinal surgeons and those ophthalmologists who work in a vitreo retinal department within Asia, United Kingdom and USA . The respondents were asked to mark either “YES” or “NO” for the given questions through google survey form.

Results:

Responses were obtained from 68 ophthalmologists in total out of which 57(83.82%) were retinal surgeons and 11(16.18%) were not. 32 (46.38%) admitted drawing fundus diagrams in their routine practice whereas, significantly 37 (53.62%) were not practicing it routinely. 45(66.18%) confessed that they draw single colored fundus drawings of retinal patients and 23(33.82%) did not.

Conclusion:

Regrettably, a large number of ophthalmologists according to our survey seem to be unenlightened with the imperative requirement of a fundus diagram in order to document various retinal pathologies in vitreo retinal patients, despite the fact that this skill has been considered mandatory in routine clinical practice of ophthalmologists.

INTRODUCTION:

Retinal diagrams are paramount in documenting retinal pathology which assists to correlate the commute in retinal findings during follow up visits[1,2], helpful where more than one retinal specialist or ophthalmologist is dealing the case and is useful in effortless followup to track the prognosis of retinal pathology[5,6,7],progression and treatment outcomes at a glance.

Ophthalmologist residents and fellows can be monitored by the supervisors and senior retinal specialists by looking at the fundus diagrams – areas of omission and perplexity can be addressed[10]. They are superior over digital fundus photographs in many aspects like being less expensive, provide instantaneous record, accentuate finest details that are difficult to photograph and eventually also help in medicolegal aspects[4].

Fundus drawings are made on a standard fundus chart, Amsler–Dubois chart, which contains three concentric circles[8] .

The innermost circle constitutes the equator, the middle circle represents the ora serrata, and the outer one is the junction between the pars plana and plicata .The radial numbered in Roman numerical is used to designate the location and extent of the lesions in clock hours. The optic nerve head is located nasal to the macula and the macula is drawn centrally[12].

Color Coding

Red color represents the following[8]:

1. Hemorrhages (preretinal and intraretinal)(
2. Attached retina
3. Vascular tumors
4. Open interior of conventional retinal breaks (tears, holes)
5. Open interior of outer layer holes in retinoschisis
6. Open portion of retinal holes in the inner layer of retinoschisis

7. Open portion of Giant retinal tear (GRT) or large dialyses
8. Inner portion of thin areas of retina
9. Elevated neovascularization
10. Subhyaloid hemorrhage
11. Retinal arterioles
12. Neovascularization
13. Vascular abnormalities/anomalies
14. Macular edema.

Blue color indicates[8]:

1. Detached retina
2. Retinal veins
3. Outlines of retinal breaks
4. Inner layer of retinoschisis
5. White with or without pressure
6. Rolled edges of retinal tears (curved lines)
7. Cystoid degeneration
8. Outline of flat neovascularization
9. Outline of lattice degeneration (inner “x”)
10. Outline of thin areas of retina
11. Outlines of ora serrata (some authors mentioned brown color)
12. Outline of change in area or folds of detached retina because of shifting fluid
13. Detached pars plana epithelium anterior to the separation of ora serrata

Green color suggests the following:

1. Opacities in the media
2. Vitreous hemorrhage
3. Vitreous membranes
4. Hyaloid ring
5. Outline of elevated Neovascularisation (NV).
6. Intraocular foreign body (IOFB)
7. Asteroid hyalosis

8. Frosting or snowflakes on cystoid degenerations
9. Retinoschisis or lattice degeneration

Brown color represents:

1. Uveal tissue
2. Pigment beneath detached retina
3. Pigment epithelial detachment
4. Malignant choroidal melanomas
5. Choroidal detachment
6. Outline of posterior staphyloma.

Yellow color defines:

1. Intraretinal subretinal hard yellow exudate
2. Deposits in the retinal pigment epithelium
3. Post cryo/laser retinal edema
4. Drusen
5. Venous sheathing.

Black represents:

Hyperpigmentation as a result of previous t/t with cryo/diathermy

Sclerosed vessels

Pigment in detached retina

Pigmented demarcation lines at the attached margin of detached retina or within detached retina.[8]

Methods and Materials:

A questionnaire was formulated in which the practicing ophthalmologists were asked 5 questions through Google Survey. The survey included particularly retinal surgeons from the UK,USA and Asia.
They were asked how many retinal detachment patients are examined by indirect ophthalmoscope with indentation?Do you think slit lamp fundus examination with fundus condensing lenses 78D,90D,Panfundus)is equally informative as indirect ophthalmoscopy?Do you draw retinal drawings of all retina patients?For how much percent of retina patients do you draw retinal drawings?Do you draw multi color drawings for your retina patients?Do you draw a single color retina for your retina patients?
68 respondents took part in this survey and they were not asked to identify themselves by mentioning their names but information was implored on their current position i.e;general ophthalmologists or vitreo retinal surgeons.

Questionnaires were inspected with the response of all ophthalmologists grouped together. The degree of internal consistency within the whole group of experts was measured by Kendall's coefficient of concordance (W). All descriptive data were analyzed with a statistical software package (SPSS, Version 16.0 for Windows).

Results and Discussion:

Of the 80 Google survey forms distributed online, a total of 70 were returned (i.e. 87.5% response rate), however in 2 of these the respondents had not marked one question . 68 correctly completed survey forms were therefore available for analysis.
Responses were obtained from 68 ophthalmologists in total out of which 57(83.82%) were retinal surgeons and 11(16.18%) were not.
Table 1 : Demographic profile

Questions	**Responses from 68 ophthalmologists**				
	100%	75%	50%	25%	0%
For how much % of your retinal detachment patients do you perform indirect ophthalmoscopy with indentation	13(18.84%)	5(7.25%)	8(11.59%)	20(40.58%)	15(21.7%)
how much percentage of retina patients get fundus diagram made by you	21(30.88%)	8(11.76%)	18(26.47%)	18(26.47%)	3(4.41%)
	Yes		**No**		
other fundus imaging modalities compared to indirect ophthalmoscopy	23(33.33%)		46(66.67%)		

Do you record retinal drawing of all retina patients	32(46.38%)	37(53.62%)
Do you draw multicolored drawings of your retinal patients	21(30.88%)	47(69.12%)
Do you draw a single colored retinal diagram for your retina patients	45(66.18%)	23(33.82%)

The most significant results showed that 53.62% of retinal surgeons and ophthalmologists did not practice the skill of fundus diagrams for their retinal patients. Out of these only 30.88% were drawing multicolored images with proper color coding. It is possible that because of a vast number of retinal patients in regular OPD the retinal surgeons and general ophthalmologists are confined to a single colored fundus diagram as it is less time consuming.

Scarcely any ophthalmology residents today gain proficiency with the art of multicolored hand made fundus drawing[1,2]. This used to be a key expertise expected by all ophthalmologists. With the emergence of electronic clinical records, digital fundus photography[11], and the ceaseless push to see more patients, the craftsmanship has almost faded away. Be that as it may, there are various motivations behind why the workmanship ought not be disregarded by ophthalmology residents,consultants and retinal surgeons.

In the first place, one should have the option to peruse old clinical graphs; some of which have just fundus drawings without text portrayals of the retina[3,4]. Regardless of the type of ophthalmology you practice, you should peruse and decipher these complex fundus diagrams. Furthermore, numerous retina experts recommend that requiring some investment to create an appropriate fundus drawing is the most effective way to force ophthalmologists into a legitimate, complete retinal assessment. Retina experts specifically should endow more energy on a color coded pencil drawing of the retina than on the retinal assessment itself.[13]

Since the Hippocrate era; documentation has been the mainstay of medical science. Nevertheless,at some place down the line this has turned out to be a lost art seldom executed by many of us.

Conclusion:

This survey has highlighted the untended dexterity of retinal drawing despite the fact that it is valuable to record a meticulous drawing of all the structures and abnormalities viewed. Present retinal surgeons and fellows tend to ignore and try to escape it under many excuses[12,13].

Hence,peculiarly this defiance to document is prevalent not only among juniors but extends over the whole spectrum of practitioners.

References:

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