Iatrogenic Retinal Breaks Induced by Separation of Posterior Hyaloid Face during 23-Gauge Pars Plana Vitrectomy

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Purpose

• Describe incidence and features of intraoperative retinal breaks caused by iatrogenic separation of the posterior hyaloid face (PHF) during 23-G Pars Plana Vitrectomy (PPV) surgery for:

Macula hole (MH)
Vitreomacula traction (VMT)
Epiretinal membrane (ERM)
Floaters
Methods

• Prospective, consecutive, single surgeon, observational case series
• 23-Gauge TSV day case surgeries
• Calderdale Royal Hospital, UK
• 2009-2011
• Approved by local ethics committee
Methods

• Collected baseline demographics, indication for surgery and axial length
• Pre-operative dilated fundoscopy
• Inclusion criteria:
  PPV for MH, VMT, ERM and floaters +
  Attached posterior hyaloid face (PHF)
Definitions

Iatrogenic Posterior hyaloid face (PHF) separations:

- Suction induced or
- Adherent- requiring membrane blue with suction
Outcome measures

- Retinal break or tear *versus* No retinal break or tear

- Retinal haemorrhage - grouped with those categorised as not experiencing retinal break or tear

- Only ‘U’ shaped tears included and pre-existing breaks excluded

- Pre-existing breaks = round or substantial surrounding pigment
...Methods

• ALL Intra-operative findings recorded by surgeon immediately after surgery

• Forced entry and parsimonious multiple logistic regression analyses were conducted, using statistical software, to test for significance of association of the set of recorded factors and covariates with the dichotomised outcome measure.
Results

- $n = 137$
- Age range: 32-94 years
- Mean age in years = 69.6 (SD 11.9)
- Mean axial length in mm = 23.7 (SD 1.41)
Results

- Pre operative diagnosis frequency (%)
  - MH  \( n = 71 \) (51.8)
  - VMT  \( n = 12 \) (8.8)
  - ERM  \( n = 27 \) (19.7)
  - Floaters  \( n = 27 \) (19.7)
Results

• Posterior hyaloid separations:

- Suction only n=126 (92%)
- Adherent n=10 (7.3%)
- Missing n=1 (0.7%)
Results

- No retinal break or tear, n=112
  - 81.80%

- Retinal break or tear, n=25
  - 18%
Results

• Breakdown of pathologies for patients with iatrogenic retinal breaks or tears (n=25)

  MH  n=13 (52%)
  VMT n=2 (8%)
  ERM n=3 (12%)
  Floaters n=7 (28%)
Results

Forced entry and parsimonious multiple logistic regression models:

• Odds of retinal break or tear reduce by about 3-4% for each increasing year of age

Forced entry:

• some substantive association with odds of retinal break or tear for adherent cases being around 3.7 times those for suction-only cases
Conclusions

• Mechanical detachment of PHF - important risk factor in formation of retinal breaks

• If undetected, the risk of Rhegmatogenous Retinal Detachment in post-operative period increases significantly

• This case series reports an 18.2% incidence of iatrogenic breaks associated with PHF separation during 23-G PPV
Conclusions

• Odds of retinal breaks reduce by 3-4% for each increasing year of age
• Adherent PHF cases are at 3.7 increased odds of iatrogenic breaks compared to suction-only cases
• Particular care intraoperatively in these cases to search for iatrogenic breaks