

SEX DIFFERENCES IN THE REPAIR OF RETINAL DETACHMENTS IN THE UNITED STATES

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FINANCIAL DISCLOSURES

Natalia F. Callaway: Consultant, Genentech

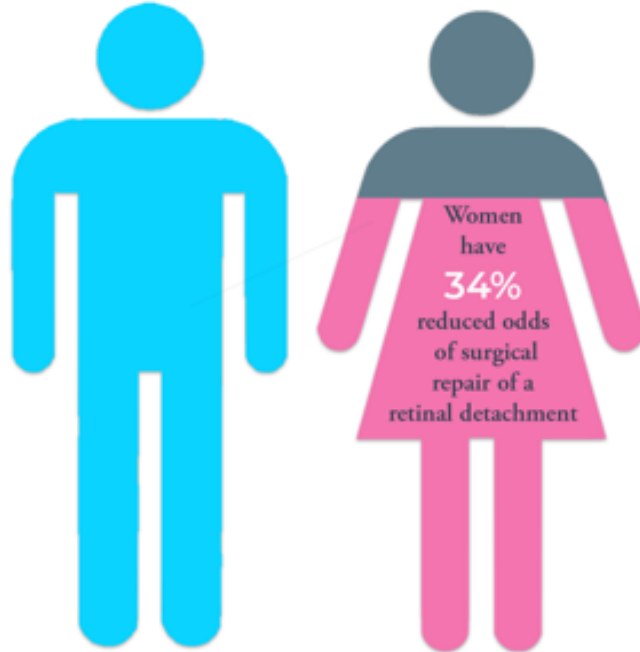
Darius M. Moshfeghi: 1–800 Contacts (board of directors, equity), Akceso Advisors AG (evaluation of DME market), Akebia (scientific advisory board for ROP), Alcon (data safety monitoring board for HAWK/HARRIER), Aldeyra Therapeutics (Site PI: ADX-2191-PVR-001 GUARD), Allegro (scientific advisory board), Apellis (Site PI: APL2-303 DERBY), Bayer Pharma AG (ROP imaging committee), CMEOutfitters.com (CME consultant), Cole Eye Institute (CME consultant), Congruence medical solutions (consultant), dSenz, Inc. (founder, board of directors, equity), Genentech (PROPER grant 2019), Grand Legend Technology, LTD (equity), Iconic Therapeutics (steering committee, unpaid), Irenix (scientific advisory board, unpaid), Linc (founder, equity, board of directors), Northwell Health (grand rounds), Novartis Pharmaceuticals (data safety monitoring board for HAWK/HARRIER, KITE/KESTREL, China nAMD/DME, pediatric advisory board), Ocular Surgery News (consultant), Pr3vent (founder, board of directors, equity), Praxis UNS, Inc. (consultant), Prime Medical Education (CME consultant), Promisight, Inc. (founder, board of directors, equity), Pykus (scientific advisory board, equity), Regeneron (CME consultant, ROP steering committee, PI for ROP trial), Retina Technologies LLC (advisor, consultant), Retina Today/Pentavision (consultant), Shapiro Law Group (ROP expert witness), SLACK, Inc. (CME consultant), University of Miami (CME consultant), Versl, Inc. (founder, equity), Vindico (CME consultant), Visunex (scientific advisory board, equity).

The other authors have no financial disclosures



SUMMARY

Retinal detachment is a potentially blinding emergency that can only be repaired surgically



If the odds of retinal detachment repair were equal for men and women in the United States,

7,029

more women would receive surgery during the study period.



BACKGROUND: Retinal Detachment

- Rhegmatogenous retinal detachment (RRD) is a vision-threatening ophthalmic emergency
- Timely repair of RRDs is critical to optimize vision outcomes and minimize long-term visual disability
- Research evaluating the real-world delivery of care and the outcomes for RRD is minimal



BACKGROUND: Sex Differences in Outcomes

- Sex differences in diagnosis, timing of surgical intervention, and outcomes have been documented in multiple surgical specialties
- Increased morbidity and mortality for women undergoing abdominal aortic aneurysm repair
- Delayed diagnosis of strokes
- Among many...



RESEARCH QUESTION

**ARE THERE SEX DIFFERENCES IN THE
REPAIR OF RETINAL DETACHMENTS IN
THE UNITED STATES?**



METHODS

Setting: The largest insurance claims database in the United States, IBM MarketScan Health Analytics

Participants: Beneficiaries with an incident RRD between 2007-2015.

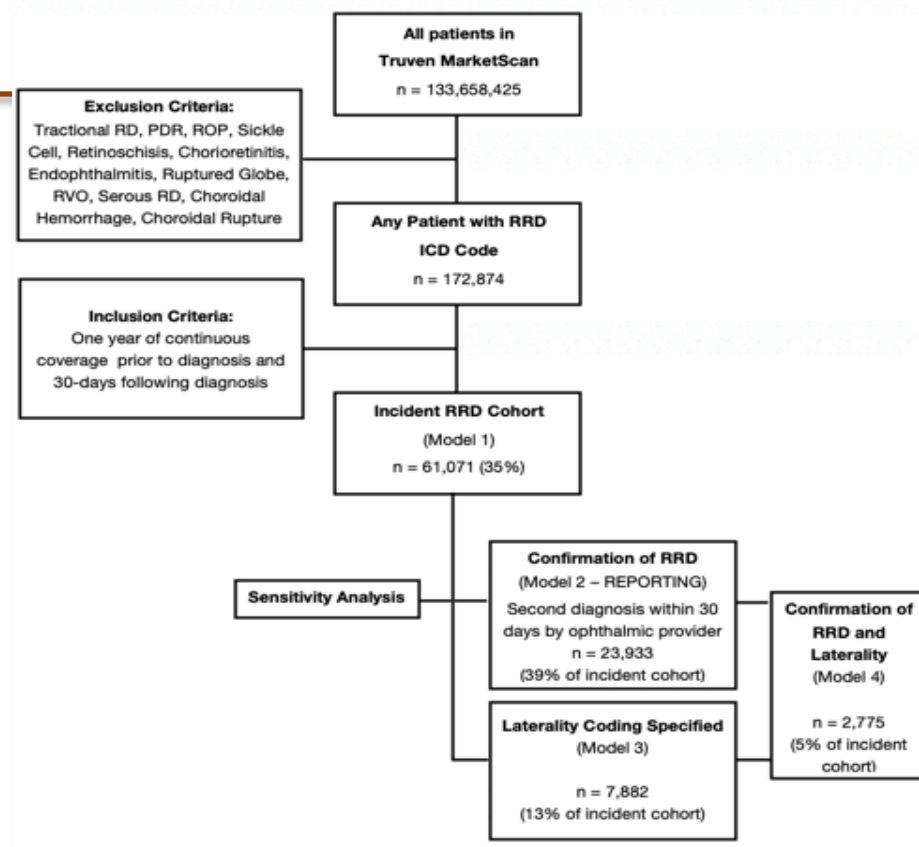
Procedures: Demographic data, comorbid ocular conditions associated with RRD, systemic comorbidities, and surgical intervention (pneumatic retinopexy (PR), pars plana vitrectomy (PPV), laser barricade, or scleral buckle (SB) were collected.

Main outcome measures: Odds of receipt of surgical intervention for incident RRD, time to repair, type of intervention, and the rate of reoperation by sex.

Further methodological details available in manuscript, *In Press* at the *American Journal of Ophthalmology*



RESULTS: Study Inclusion Flow Diagram



RRD = rhegmatogenous retinal detachment; RD = retinal detachment; PDR = proliferative retinal detachment; ROP = retinopathy of prematurity; RVO = retinal vein occlusion; ICD = international classification of diseases



RESULTS: Receipt of RRD Repair

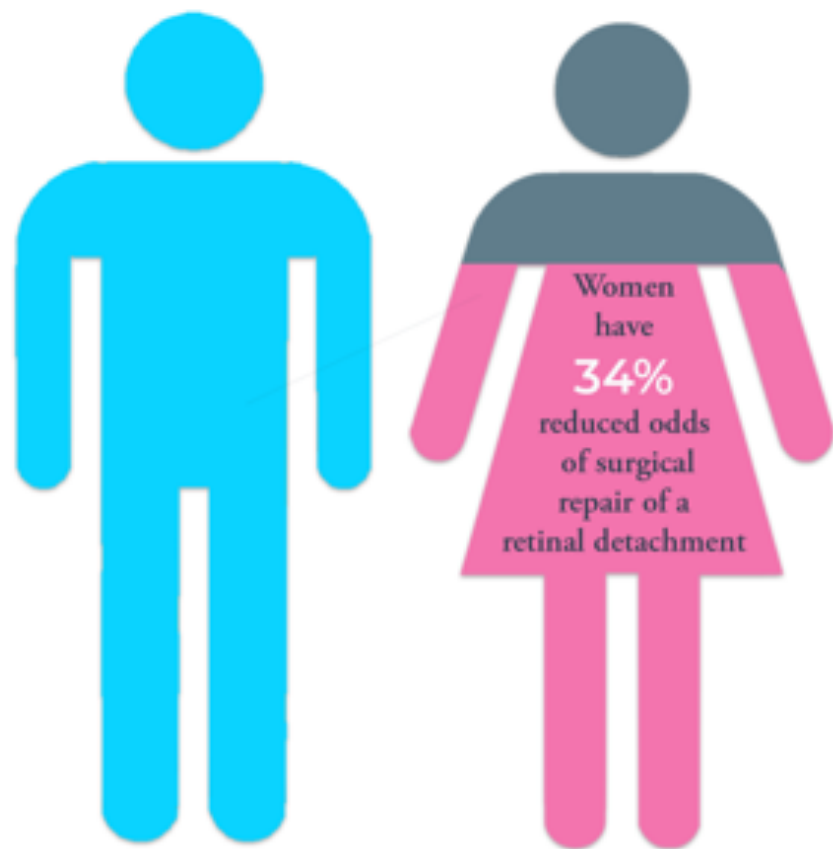
Multinomial Logistic Regression Model for Likelihood of Receipt of Any Rhegmatogenous Retinal Detachment (RRD) Repair within 30 Days of Diagnosis in the Truven MarketScan Database 2007-2015

Variables	Full Incident Cohort (n = 61,071)		Cohort with Second Confirmation of Incident RRD (n = 23,933)		Cohort with RRD with Laterality (n = 7,882)		Cohort with Second Confirmation of RRD and Laterality (n = 2,775)	
	*Adjusted OR (95% CI)	p-value	*Adjusted OR (95% CI)	p-value	*Adjusted OR (95% CI)	p-value	*Adjusted OR (95% CI)	p-value
Sex								
Male	1.00		1.00		1.00		1.00	
Female	0.68 (0.66-0.71)	< 0.001	0.66 (0.59-0.73)	< 0.001	0.72 (0.66-0.80)	< 0.001	0.61 (0.47-0.79)	< 0.001
Ocular Comorbidities								
Myopia	0.86 (0.79-0.94)	0.001	0.87 (0.68-1.1)	0.246	0.61 (0.5-0.76)	< 0.001	0.84 (0.49-1.44)	0.518
Pseudophakia	0.66 (0.58-0.75)	< 0.001	0.73 (0.53-1)	0.051	1.25 (1.08-1.44)	0.002	0.95 (0.65-1.37)	0.767
Lattice Degeneration	1.79 (1.7-1.88)	< 0.001	1.55 (1.35-1.79)	< 0.001	1.67 (1.49-1.87)	< 0.001	1.71 (1.24-2.36)	0.001
Vitreous Hemorrhage	2.1 (1.98-2.23)	< 0.001	1.1 (0.94-1.28)	0.258	2.02 (1.77-2.31)	< 0.001	0.6 (0.44-0.82)	0.001
Age at Diagnosis								
< 30	1.00		1.00		1.00		1.00	
31-40	0.95 (0.86-1.05)	0.326	0.99 (0.76-1.27)	0.923	0.77 (0.57-1.03)	0.078	0.92 (0.47-1.83)	0.822
41-50	1.58 (1.45-1.72)	< 0.001	1.64 (1.31-2.05)	< 0.001	1.37 (1.08-1.75)	0.011	2.27 (1.21-4.24)	0.010
51-60	1.99 (1.84-2.15)	< 0.001	2.29 (1.86-2.81)	< 0.001	1.55 (1.24-1.94)	< 0.001	2.01 (1.18-3.42)	0.011
> 60	1.44 (1.33-1.55)	< 0.001	2.24 (1.8-2.79)	< 0.001	1.01 (0.81-1.27)	0.908	1.83 (1.05-3.21)	0.034
Year of Diagnosis								
	0.92 (0.91-0.93)	< 0.001	0.96 (0.94-0.98)	0.001	1.24 (1.11-1.39)	< 0.001	1.3 (0.96-1.76)	0.085

* Analysis adjusted for: sex, ocular comorbidities, age at diagnosis, and year of diagnosis. Confidence interval (CI), Odds ratio (OR), Rhegmatogenous retinal detachment (RRD).



Retinal detachment is a potentially blinding emergency that can only be repaired surgically



If the odds of retinal detachment repair were equal for men and women in the United States,

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RESULTS

- Repair of retinal detachments for women is more often delayed after adjustment for other variables by 0.17 days ($p=0.04$)
- Women were more likely to undergo primary laser barricade (RRR 1.68, $p < 0.001$), primary SB (RRR 1.15, $p < 0.001$), and PR (RRR 1.07, $p < 0.04$) than men
- The odds of reoperation were lower in women (OR 0.91, 95% CI 0.85 – 0.96, $p=0.002$) after adjustment



DISCUSSION

- Women have 34% reduced odds of receipt of surgery for receiving retinal detachment repair
- This study is the first to focus on the difference between women and men in the treatment of an emergent potentially blinding condition



DISCUSSION: Why is there a difference?

Sex Differences (Biological):

- ❖ Men and women have published differences in the rates of retinal detachment and trauma
- ❖ Biological differences in the type of retinal detachments between the sexes



DISCUSSION: Why is there a difference?

Gender Differences (Societal):

- ❖ Women are more often caregivers for children, parents, spouses at every stage of their lives and this informal responsibility carries with it a significant physical and emotional burden
- ❖ Women may be less likely to voice concerns or challenge authority, here the physician, and this may result in “no-shows” on the date of surgery
- ❖ Women are more likely to be widowed so they may not have the support to travel to the numerous appointments
- ❖ Provider bias



STRENGTHS AND LIMITATIONS

STRENGTHS:

- Largest claims database available in the United States representing about one-third of the working population
- Rigorous sensitivity modeling

LIMITATIONS:

- Those inherent to claims data: miscoding, lack of validation with clinical evaluation, does not apply to uninsured individuals, children, or those on Medicare



THANK YOU

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