Vitamin A Deficiency and Ocular Manifestations After Bariatric Surgery

A Systematic Review and Meta-analysis

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BACKGROUND

Bariatric surgery impairs fat-soluble vitamin absorption. Vitamin A deficiency can present years to decades after surgery. Ophthalmologists are often the first to recognize it.

METHODS

Databases MEDLINE, Embase, CENTRAL, Scopus, Web of Science. Inception–Feb 2026; no language or date restrictions.

Included 27 reports / 21 unique studies. Primary pool: 9 nonpregnancy surveillance cohorts, 455 participants.

Reporting & RoB PRISMA 2020 + MOOSE; Cochrane RoB 2, ROBINS-I, JBI; GRADE certainty.

Analysis REML random-effects pooling. I^2, τ^2, 95% prediction intervals.

RESULTS

Prevalence (9 cohorts, n=455): 26.1% (95% CI 18.5–35.4); I^2 = 71%; 95% PI 10.0–52.8%.

By procedure RYGB 18% (k=6); BPD-DS 38% (k=2); BPD 59% (k=2).

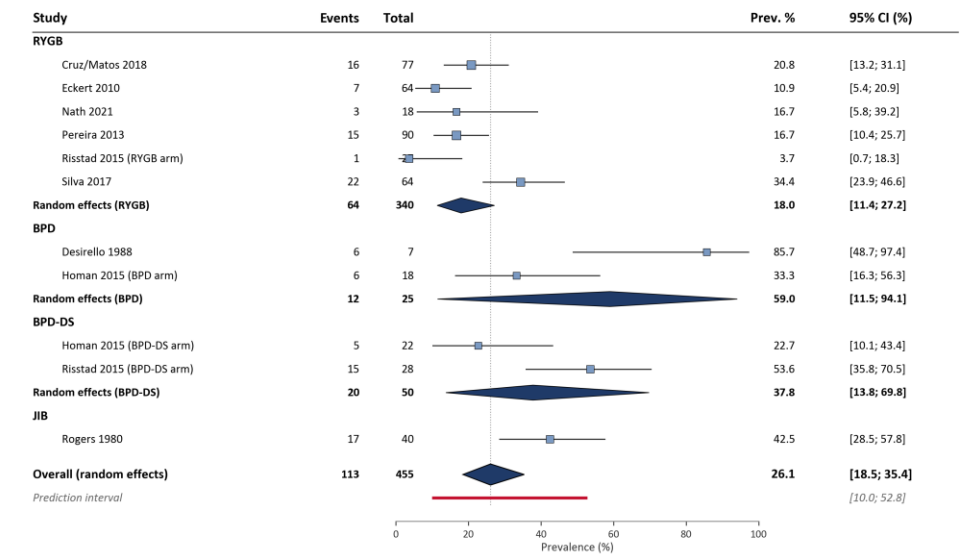
Pregnancy after RYGB 61% (52–70%; n=108).

Latency (n=19): median 5 yr (RYGB) → 27 yr (revisional); range 2–36 yr; 7/19 (37%) ≥10 yr post-op.

Phenotype nyctalopia, ocular surface disease, ERG dysfunction.

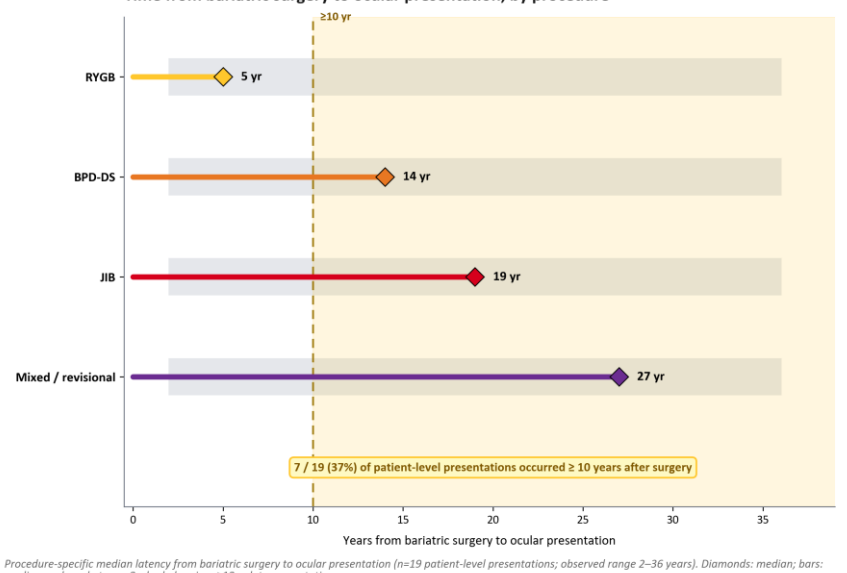
GRADE low–moderate.

Prevalence of vitamin A deficiency, by procedure



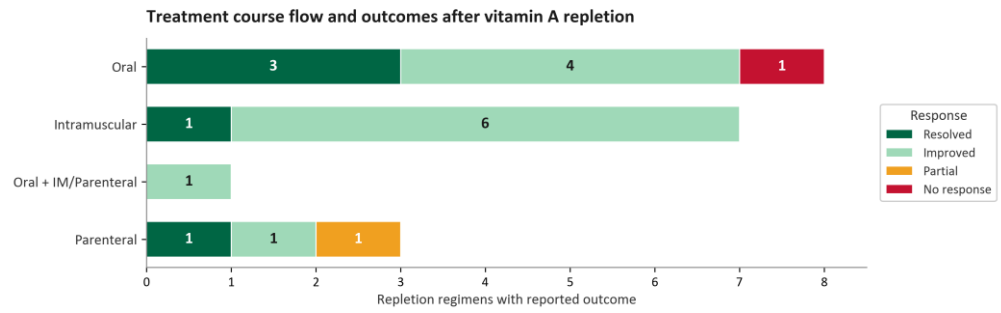
9 studies, n=455 participants. Random-effects model. Diamonds = pooled estimates; whiskers = 95% CI; red bar = prediction interval.

Time from bariatric surgery to ocular presentation, by procedure



Procedure-specific median latency from bariatric surgery to ocular presentation (n=19 patient-level presentations; observed range 2–36 years). Diamonds: median; bars: median anchored at year 0; shaded region: ≥10 yr late-presentation zone.

Treatment course flow and outcomes after vitamin A repletion



20/23 courses (87%) showed improvement or resolution.

CLINICAL IMPLICATION

Treatment: 87% (20/23) improved or resolved with vitamin A repletion; most responded to oral supplementation.

In a post-bariatric patient with nyctalopia, ocular surface disease, or unexplained visual decline, test serum retinol regardless of time since surgery.

Vitamin A deficiency after bariatric surgery varies by procedure type and presents 5 to 27 years post-operatively.

Consideration of VAD may be warranted, regardless of time since surgery.

Scan for References