

Direct Oral Anticoagulants after Bariatric Surgery: A Multicentre Cohort Study

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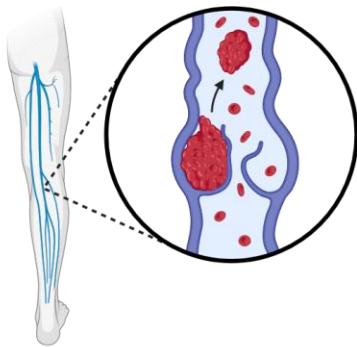


Anti-Coagulation in Obesity

Atrial Fibrillation Risk -  RR 49%



VTE Risk -  RR 11%



Warfarin After Bariatric Surgery

DOSE REQUIREMENTS

- 74% required dosing adjustments
- 25% dose reduction required
- Greatest change occurred in the first 8 weeks

BLEEDING COMPLICATIONS

- 10% readmission rate for bleeding
- 11% required blood transfusions
- RYGB carried the highest risk

ISTH Guidelines: DOACs After Bariatric Surgery (2021)

Acute Post-Operative Period

- **DO NOT use DOACs** for VTE prophylaxis immediately after surgery
- Measure DOAC levels once established

✓ RECOMMENDED

Apixaban & Rivaroxaban

- Standard doses for VTE
- Regardless of BMI/weight
- Monitor trough levels

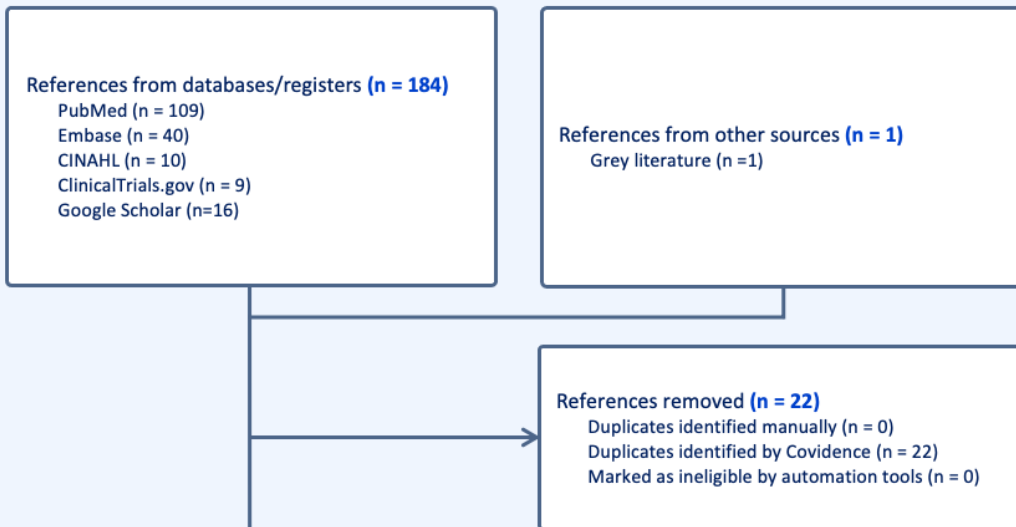
⚠ AVOID

Dabigatran & Edoxaban

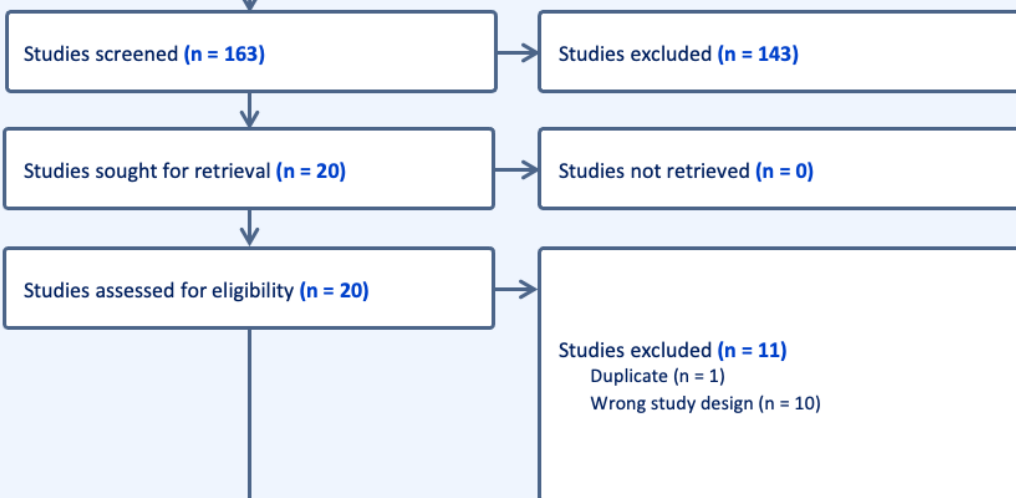
- Mixed/limited data
- Avoid if BMI >40 kg/m²
- Avoid if weight >120 kg



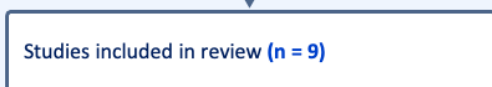
Identification



Screening

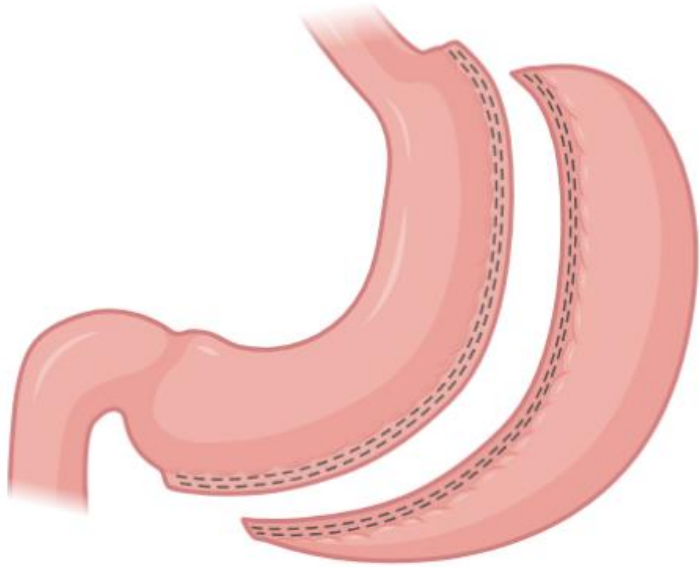


Included



DOAC Absorption Patterns

Sleeve Gastrectomy



Apixaban



Dabigatran



Rivaroxaban

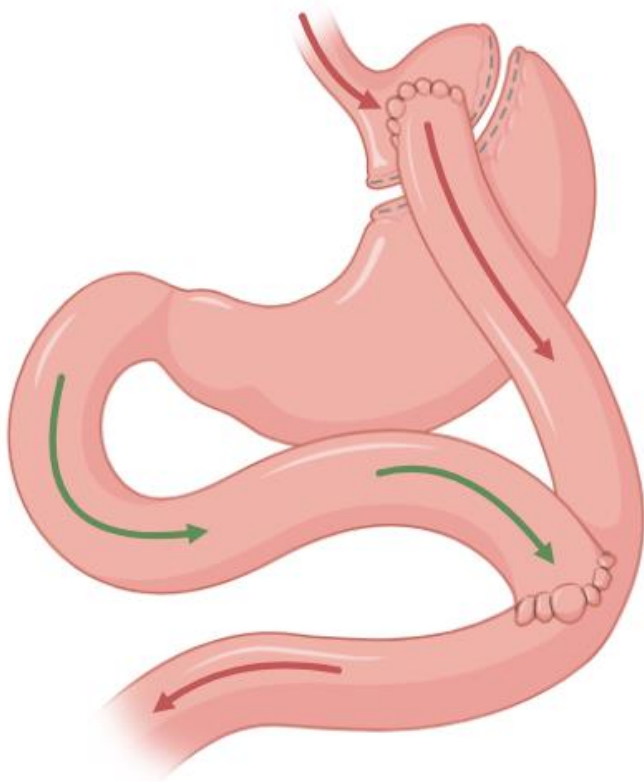


Edoxaban



DOAC Absorption Patterns

Roux en Y Gastric Bypass



Apixaban



Dabigatran



Rivaroxaban

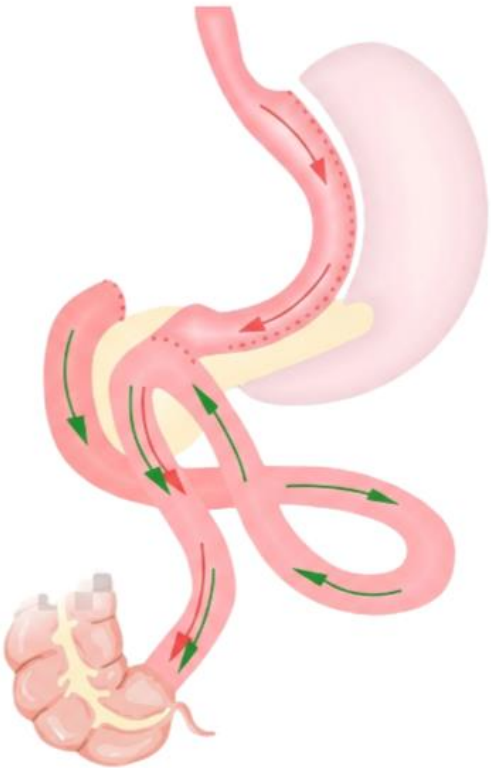


Edoxaban



DOAC Absorption Patterns

Single Anastomosis
Duodeno-Ileal Bypass
with Sleeve Gastrectomy -
SADI-s



Apixaban

Rivaroxaban



Dabigatran

Edoxaban

Primary Objective

- To perform an analysis of anti-coagulation practices and to measure DOAC concentration levels across three bariatric centres



Methods

- Phase I, pharmacokinetic study
- Ethical approval
 - *SVHG RS25-040, UHG C.A. 3562, BRC*
- Retrospective patients were identified from EPR
 - *Ethical approval RCR25-020*



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Methods

- The samples were centrifuged (3000 rpm for 6 min) and frozen at -80°C .
- Drug levels were measured using calibrated chromogenic anti-factor Xa assays, while dabigatran levels were measured using a dilute thrombin time assay.
- All drug analyses were performed in St James' Hospital.



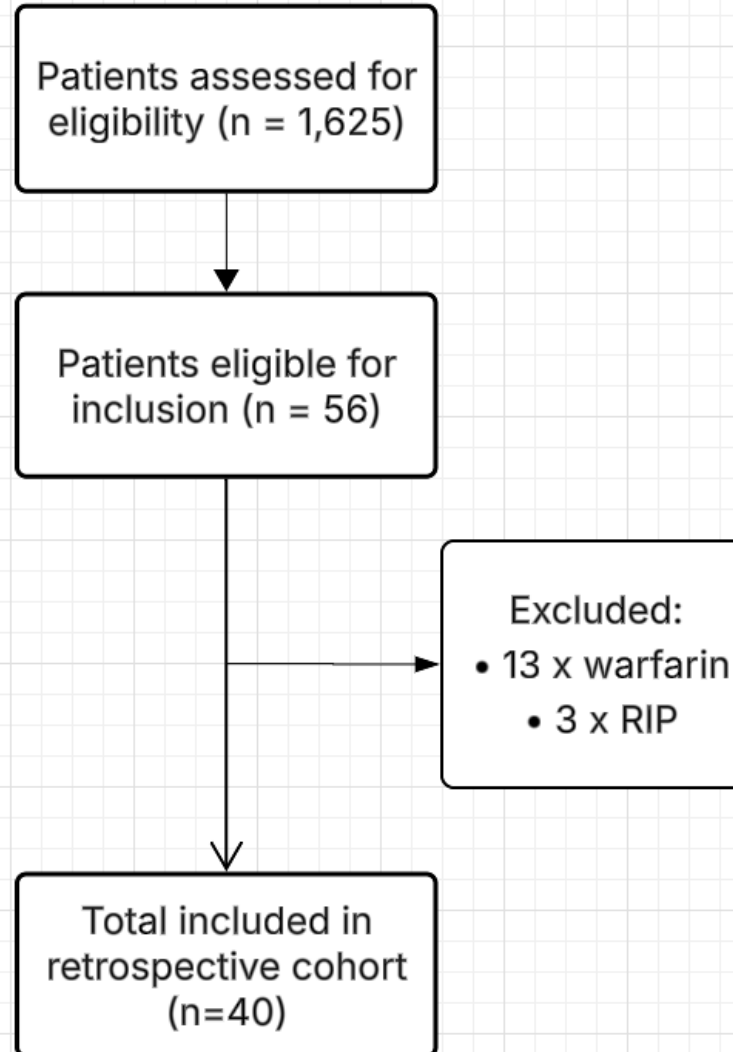
Patient and Public Involvement

- ICPO advocacy leads



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Results

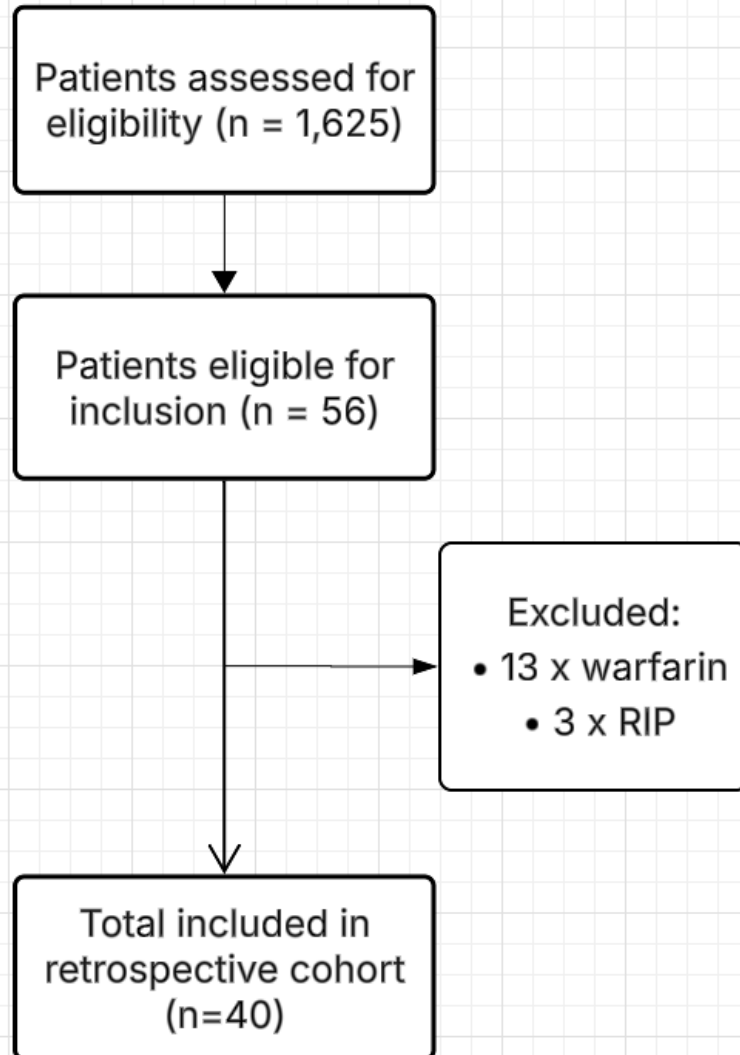


Results (Retrospective)

Demographics:	n (%)
No. of Patients	40
Female (%)	20 (50%)
Mean Age (years)	53.9 ± 11.2
Mean BMI (kg/m ²)	51.31 ± 13.3
Time to blood test (years)	3 (IQR 1-6)
Mean Post-Operative BMI	36.5 ± 9.3
Mean weight loss (kg)	43.5 ± 28.2
Indication for Anticoagulation - A Fib	24 (60)



Results



Prospectively

- 19 patients



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Results (Prospective)

Demographics:	n (%)
No. of Patients	20
Female (%)	11 (55)
Mean Age (years)	56.15 ± 10.2
Mean BMI (kg/m ²)	46.6 ± 9.2
Time to blood test (days)	2.5 (IQR 2-20.5)
Indication for Anticoagulation - A Fib	19 (95)



Results

Surgery Type:	n (%)
Gastric Bypass	33 (56)
Sleeve Gastrectomy	24 (41)
SADIs	2 (3.4)

Post-Operative DOAC:	n (%)
Apixaban	39 (66.1)
Rivaroxaban	13(22)
Edoxaban	4 (6.8)
Dabigatran	3 (5.1)



Results

Apixaban



Surgery Type:

Absorption (%)

Gastric Bypass (n=24)

100

Sleeve Gastrectomy (n=15)

100

SADIs (n=2)

100

Edoxaban



Surgery Type:

Absorption (%)

Sleeve Gastrectomy (n=3)

100



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Results

Rivaroxaban



Surgery Type:

Absorption (%)

Gastric Bypass (n=6)

33

Sleeve Gastrectomy (n=5)

80

Dabigatran



Surgery Type:

Absorption (%)

Gastric Bypass (n=1)

0

Sleeve Gastrectomy (n=1)

0



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Our Data Reinforces the Current Evidence

1 Apixaban - robust across all anatomy

- 100% attainment: RYGB, OAGB, sleeve, SADI-S (n=43)
- Echoes pooled 96% in-range rate from our unpublished review

2 Rivaroxaban - anatomy-dependent

- 0% attainment post-RYGB vs 67–80% post-OAGB/sleeve
- Confirms the review's dose/anatomy divergence

3 Dabigatran - consistently poor

- 0% attainment in both cases (OAGB, sleeve)
- Aligns with the published data on 8 patients

4 Edoxaban - data gap persists

- Sleeve gastrectomy only, n=3
- Reflects near-total absence of evidence elsewhere



Discussion

- Apixaban first-line DOAC in Ireland
- Real-world cohort data adds to the literature built on $k=1-3$ studies per agent
- Confirms: absorption risk is agent-specific and procedure-specific, not class-wide
- Supports individualised DOAC selection, challenging blanket ISTH/ASMBS caution
- Extends evidence into an under-studied area: SADI-S
- Attainment is a pharmacokinetic surrogate - not proof of clinical adequacy



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