

The logo for LING, featuring the letters 'LING' in white, overlaid on a stylized graphic of three curved, overlapping bands in dark blue, red, and yellow.

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Complex ilio caval reconstruction with self-expanding nitinol stents

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Disclosure

Speaker name:

Tim Sebastian

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

- I do not have any potential conflict of interest



Why dedicated venous stents?

Expectations

Precise deployment

Less foreshortening

Flexibility

Optimal accommodation to venous anatomy

Equally distributed radial force

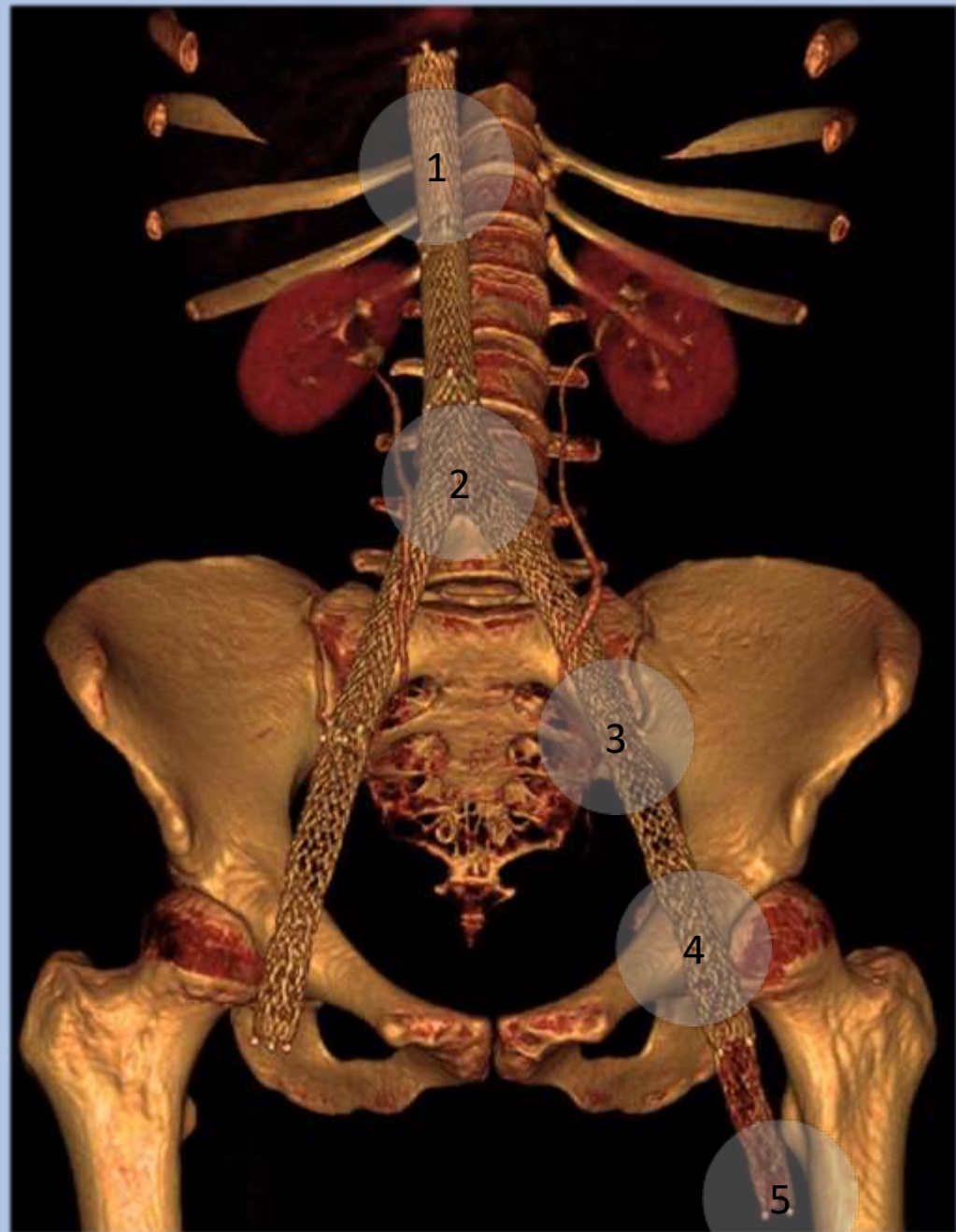
Throughout stent length

Wall coverage

Protecting stent lumen from fibrotic tissue

Durability

At critical sites



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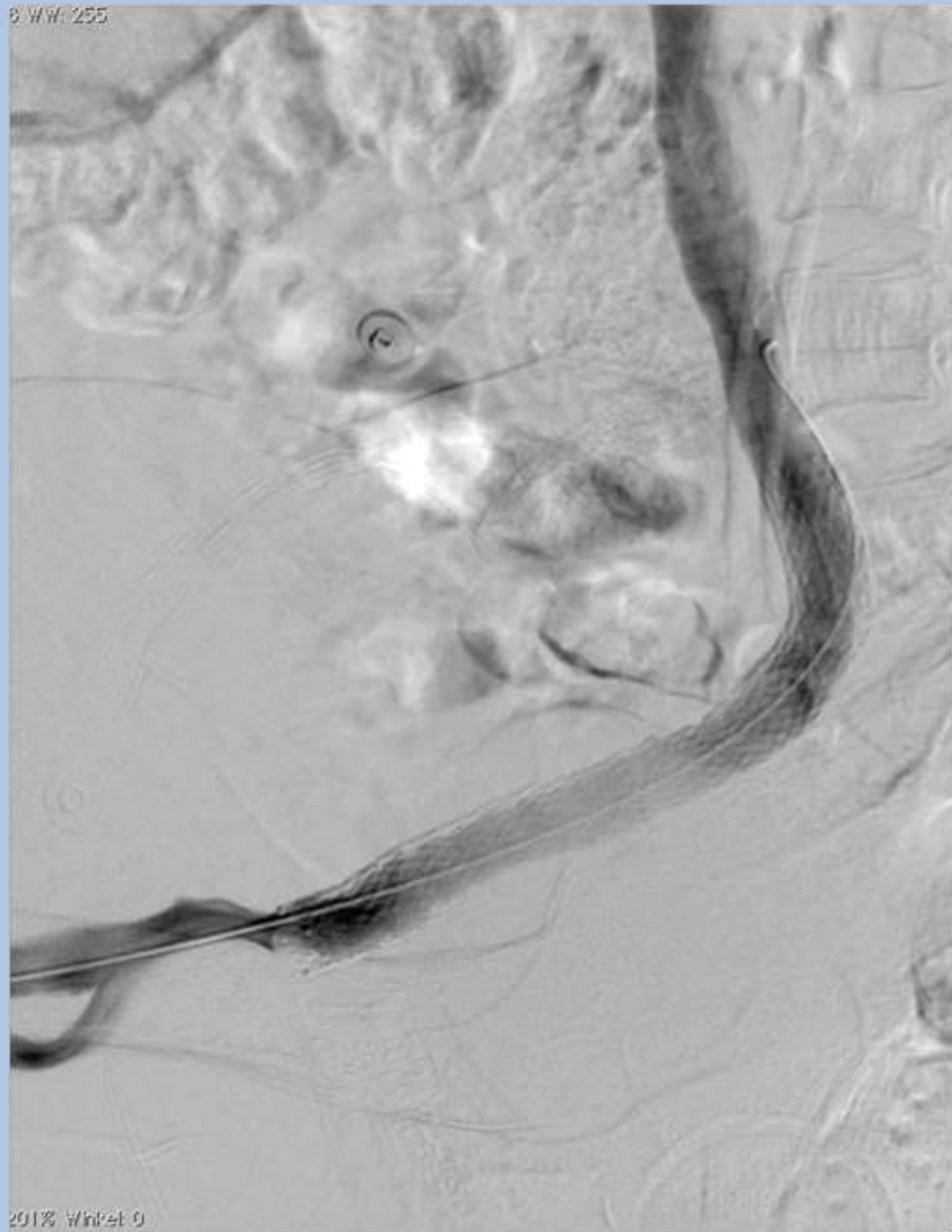
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Swiss Venous Stent Registry

Prospective, on-going register including patients who received venous stents in Switzerland since 2011

From **274** patients in the registry, **62** patients received caval or ilio-caval stent interventions **with nitinol stents** (212 excluded with ilio-femoral stents only)

Stents used:

Sinus XL, Sinus XL Flex, Sinus Superflex (Optimed, Ettlingen, Germany)

Zilver vena (Cook, Bloomington, USA)

Sebastian T, Dopheide JF, Engelberger RP, Spirk D, Kucher N.

Outcomes of endovascular reconstruction of the inferior vena cava with self-expanding nitinol stents.

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Baseline characteristics

Mean age 46 ± 18 years, 14 women

Index Diagnosis

33 post-thrombotic syndrome (53%)

17 acute thrombosis (27%)

12 non-thrombotic IVC compression (19%)

22 external IVC compression

16 cancer related, 3 retroperitoneal fibrosis, 1 echinococcosis, 1 abdominal aortic aneurysm, 1 vertebral screws

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Procedural data

Technical success 61 (98%)

CDT or PMT 21 (34%)

Iliac kissing stents 52 (84%)

IVC Filters 0

Mean number of stents 4.5 ± 1.9 stents

Mean stent length 45 ± 20 cm

Proximal landing zone

Right atrium 7 (11%)

Suprarenal 42 (68%)

Infrarenal 13 (21%)

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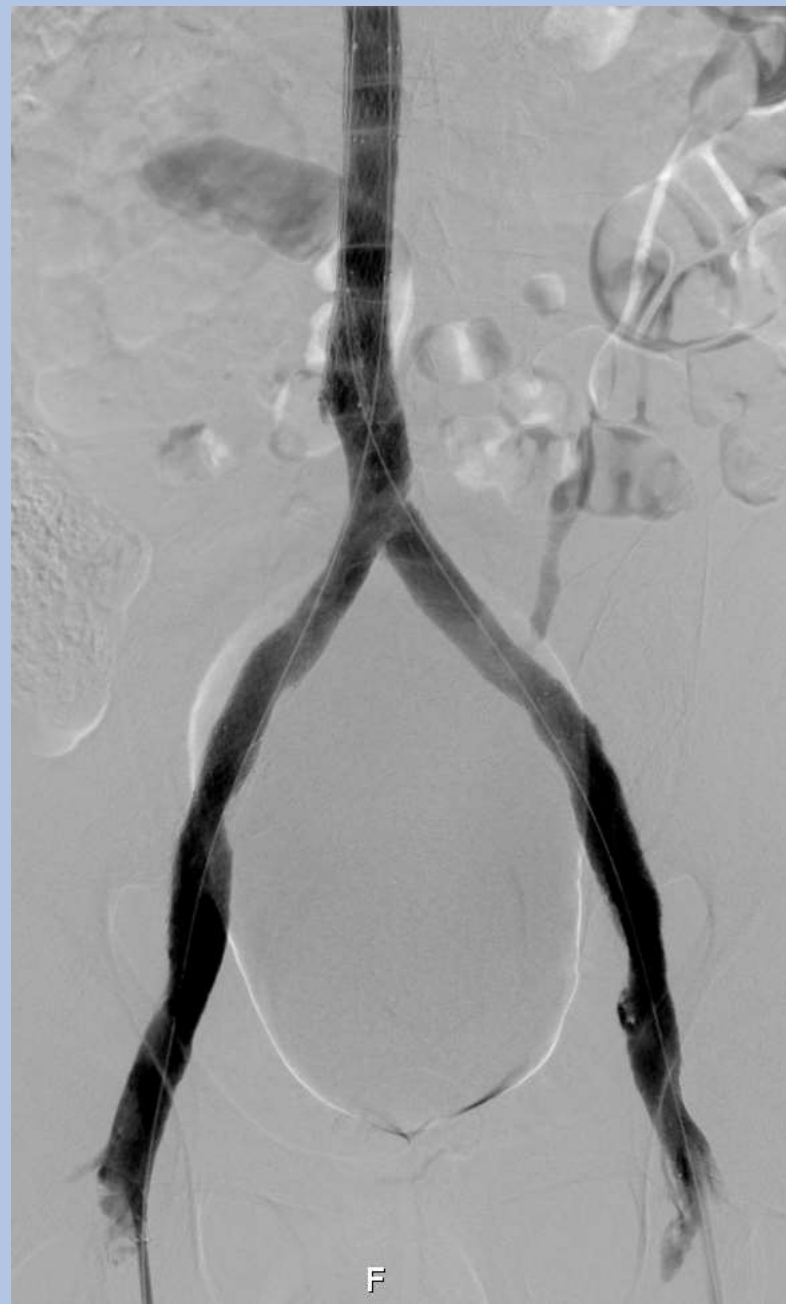
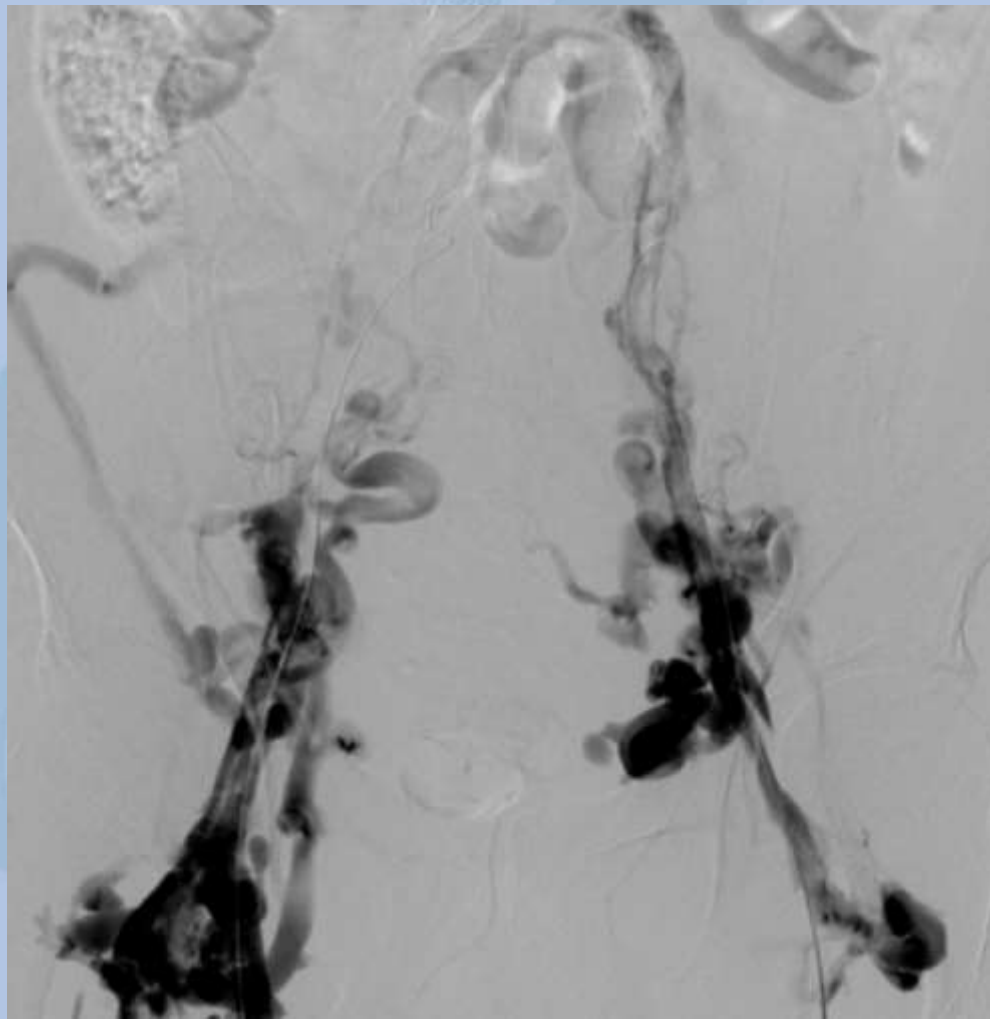
Procedural data

Type I: Single-segment stenosis:	4 (6%)
Type II: Multi-segment stenosis:	14 (23%)
Type III: Single-segment occlusion:	2 (3%)
Type IV: Multi-segment occlusion:	42 (68%)

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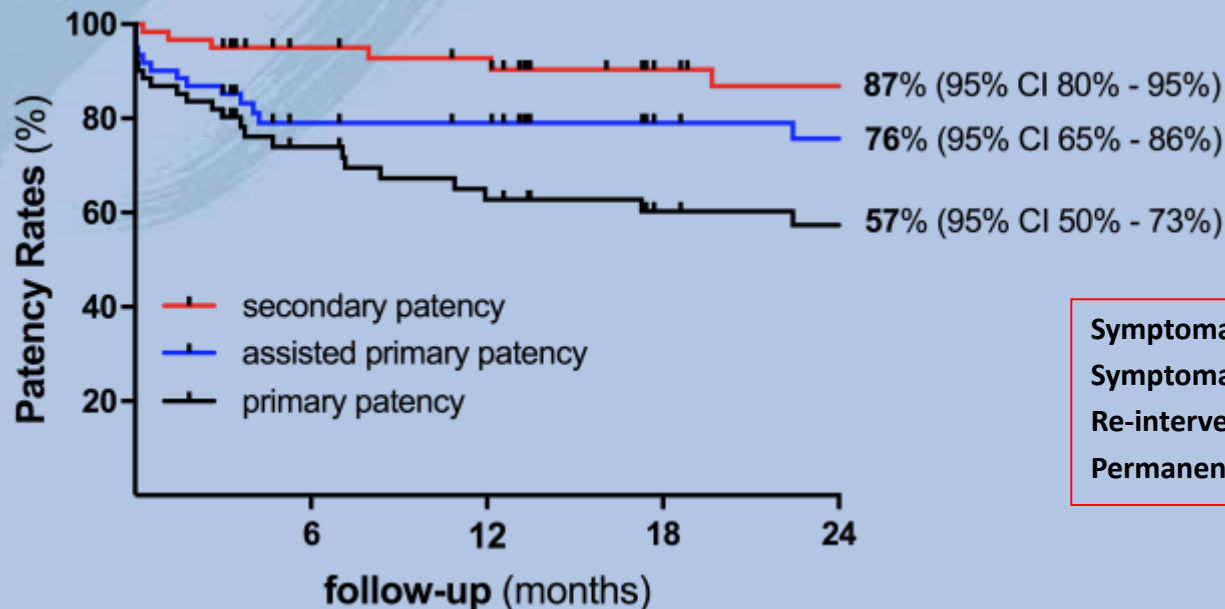
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Patency Outcome

Mean follow up 21 months, death 4 (underlying malignant disease)



Symptomatic stent occlusion: 13 (21%)
Symptomatic stent stenosis: 10 (16%)
Re-intervention: 22 (36%)
Permanent loss of patency: 5 (8%)

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Clinical Outcome

Ulcer healing: 8/8 (100%)

Development of new ulcers: 0%

Freedom of symptoms¹: 43%

Significant clinical improvement¹: 48%

¹: subjective symptom score as suggested by *Bozkaya et al.*

Decrease in Villalta score: 11.8 to 3.5

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Clinical Outcome

On-going anticoagulation therapy	56 (92%) patients
DOACs	40 (66%) patients
Vitamin K antagonists	14 (23%) patients
LMWH	2 (3%) patients
+ P2Y12 antagonists	7 (11%) patients

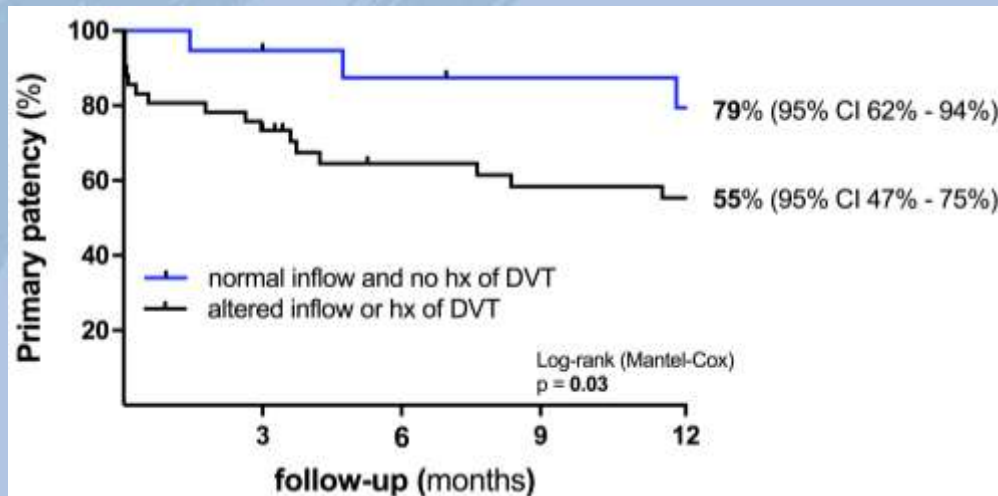
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Predictors of patency loss

Patients with a history of deep vein thrombosis and/or postthrombotic leg inflow veins are at high risk for primary patency loss.



Stenting below the inguinal ligament was not associated with loss of primary patency in our cohort.

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What's in the literature

Selection of recent publications on ilio-caval stent reconstruction

	N	Follow Up (months)	Acute Cases	Technical Success	Main Stent	Primary Patency	Secondary Patency	Ulcer Healing	Anti-coagulation
De Graaf 2015	40	15	15%	100%	Nitinol	70%	78%	N/A	VKA (min 6m)
Murphy 2016	71	48	0%	85%	Wallstent Z-Stent	52%	93%	78%	VKA ASS (life)
Chick 2017	120	24	48%	100%	Wallstent	87%	94%	88%	VKA/DOAC (min 6m) Clop (2m) ASS (life)
Erben 2018	66	42	2%	90%	Wallstent Z-Stent	78%	91%	100%	OAC (life)
Sebastian 2018	62	21	27%	98%	Nitinol	57%	87%	100%	VKA / DOACs (life)

IVC filter-associated: Murphy (54%), Chick (100%), Erben (38%)

Conclusion

Primary patency rate beyond 2 years for nitinol stents is >55%

Secondary interventions are often necessary to maintain patency, most likely due to **impaired venous stent inflow**

Secondary patency rates can be as high as 90%

Role of **anticoagulation / anti-platelet** therapy is unclear

Data for nitinol stents is similar compared to Wallstents

The logo for LING features the word "LING" in a white, sans-serif font. The letters are positioned over a stylized graphic consisting of several overlapping, curved brushstrokes in shades of dark blue, light blue, red, and orange. The background of the slide is a light blue gradient with large, faint, curved brushstrokes in a slightly darker shade of blue.

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Thank you for your attention.