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Tracheo – Innominate fistula: EV treatments

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ABSTRACT

TIF is a potentially lethal hemorrhagic complication associated with "long standing" tracheostomy.
Incidence up to 1%.
75% occur < 3 weeks old stoma creation.
Sentinel bleeding precedes in 35% of cases.
First described by Korte in 1897. First survivers were reported in the mid 20th century.
Without intervention 100% mortality.
Classic Tx.: Innominate ligation through midsternotomy.
1st EV TX publication – Deguchi JVS 2001.

Contributing factors:
* Low positioning of the tracheostomy stoma
* High riding innominate artery
* Pressure from the elbow's tip or cuff of the tracheostomy tube
* Anatomical variations
* Over-inflation of the tracheostomy cuff > 20
* (Tracheal mucosal perfusion ceases at 37 mmHg)
* Local infection of tracheostomy wound
* Scoliosis and progressive scoliosis
* Radiation therapy
* Immunosupression treatment
* Steroid treatment
* Malnutrition
* Diabetes
• Excessive patient neck movement

Survival with traditional O.S -25% short term, 15% long term

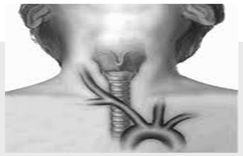
Using preventive methods is important.

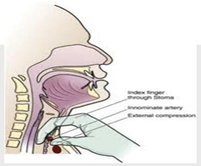
Prophylactic preventive ligation of the Innominate artery has been described since 2007. Before ligation circle of Willis needs investigation.

PURPOSE

Since 2004 10 cases were treated. One open and 9 EV. This report is aimed to sum up our EV results

METHODS





Innominate artery traverses trachea at 9th tracheal ring (6-13)

Prevention

Avoid low tracheostomy placement, (above 4th ring)

Avoiding excessive cuff pressure (<20 mmHg)

Use of soft flexible tracheostomy tubes

High index of suspicion in preceding minor bleedings

Periodic tracheoscopy to detect early signs

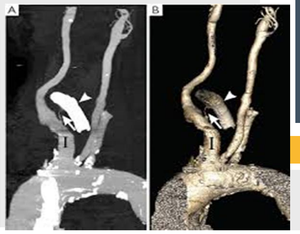
Prophylactic preventive ligation of the Innominate artery

RESULTS

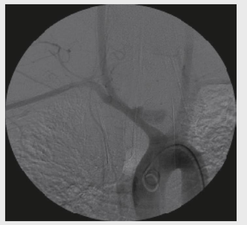
N	Department	Age	Stoma Age (d)	Diagnostic Modality	Approach	Device	Patent RCCA	Patent RSCA	Stop Bleed	Open / conversion	Mortality	Neurologic outcome
1 04	ICU	55	2550	Bronchoscopy CTA	Midsternotomy	No device	+	+	Yes	Open	Dead POD 1	Anoxic brain Damage
2 05	Cardio-Thoracic	73	12	Bronchoscopy CTA IOA	Transfemoral + Trans Rt. SCA	Occluder 16X33mm	+	+	Yes	_____	Dead at POD 30	?
3 06	Neuro-surgery	18	4	CTA IOA	Transfemoral + Trans Rt. SCA	Occluder 16X33mm	+	+	Yes	_____	Alive	No new damage
4 09	ICU	77	18	Bronchoscopy CTA IOA	Transbrachial + Transfemoral	Atrium 12X40mm	+	+	Yes	_____	Dead POD 7	?
5 09	ICU	81	7	Bronchoscopy IOA NO CTA	Transbrachial + Midsternotomy	Fluency 9X40 mm	—	+	No	Conversion RCCA from Aortic arch	Dead at POD 3	?
6 09	PICU	10	550	IOA	Transfemoral	Fluency 13.5X40mm (SCA covered)	+	—	Yes	_____	Alive	No new damage
7 12	Int. Med.	69	28	CTA IOA	Transfemoral	Fluency 13.5X40mm	+	+	Yes	_____	Alive	No new damage
8 13	ICU		90	CTA IOA	Transfemoral	Atrium 14X40mm	+	+	Yes	_____	Alive	No new damage
9 14	ENT	80	55	CTA	Transfemoral	Atrium 7X59mm Baloon 12mm	—	+	No Yes W' Baloon 14mm	_____	Alive Dead at POD 140	Ischemic stroke
10 16	ICU Cardiogenic shock	76	12	CTA	Transfemoral	Atrium 7X38 10mm	+	+	Yes	_____	Alive	Ischemic Stroke

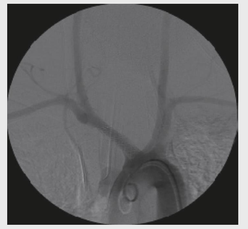
Bleeding Control
Over inflate the tracheostomy cuff
Trans laryngeal intubation with baloon placed distal to tracheostomy to prevent aspiration
Manual finger compression of arteryagainst sternum
Compression via rigid bronchoscope
Diagnostic CTA
TREAT: Thoracotomy or EV Tx

Approaches
Trans femoral
Trans Rt Carotis, retrograde
Trans Rt arm (least recommended)



RESULTS





The extremely high mortality rates justifies the less invasive alternative of E.V. Tx

Keep inline flow to the Carotis

Mandatory diagnostic CTA for anatomy and measurments
In Abbarent RSCA trans brachial approach will fail.
In Rt CCA originating from the arch trans brachial approach might miss the a TCF.
Over dilate the covered stent
Make all efforts to leave the RCCA open.

CONCLUSION

Never ignore or under estimate herald bleeding
If prohylactic preventive Innominate ligation is an option then prophylactic EV Tx should also be considered.

DISCLOSURES

NONE