DIAGNOSIS/ MANAGEMENT OF DYSFUNCTIONAL HD CATHETER

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ASDIN 13th National conference
# CATHETERS

<table>
<thead>
<tr>
<th></th>
<th>BARD</th>
<th>COVIDIEN</th>
<th>MEDCOMP</th>
<th>MERIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIP</td>
<td>SYMMETRICAL GLIDEPATH</td>
<td>SYMMETRICAL PALINDROME</td>
<td>SPLIT TIP</td>
<td>STEP TIP PROGUIDE</td>
</tr>
<tr>
<td>SIZE</td>
<td>14.5Fr</td>
<td>14.5Fr</td>
<td>14Fr</td>
<td>14.5Fr</td>
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<tr>
<td>BLOOD FLOW</td>
<td>&gt;400</td>
<td>&gt;400</td>
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<td>&gt;400</td>
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DEFINITION-KDOQI

• Blood pump flow rate < 300mL/min*, Qb > 10%

• ↑Arterial (< -250mmHg)
  • ↑Venous pressure (> 250mmHg)

• Inability to aspirate ports/ FLUSH

• Inability to provide adequate HD prescription

• Frequent Pressure alarms- not responsive to patient repositioning or catheter flushing
EARLY DYSFUNCTION (< 2 weeks)

1. Malposition of tip: Right atrium / IVC
2. Retraction of tip
3. Kink: Tunnel
4. Constriction by exit site sutures
• 40 y/o obese male referred for a recently placed RIJ TDC. He has a symmetrical tip TDC. The nurse is unable to obtain Qb ~200 – 250 inspite of repeated tPa application & changes in position. There are no issues with flushing or aspiration from either port.

You suspect:
1. B/L Port thrombus
2. Fibrin sheath
3. Catheter tip retraction
4. Kink
• Obese individual: Pectoral fat
• Large breasted female

**MANAGEMENT**

Trendelenburg

Longer catheter: RA

Shorter more lateral Tunnel

Parasternal tunnel
WHAT DO YOU DO---

If in spite of a longer catheter there is still persistent dysfunction with next HD session???
Safety and efficacy of placing internal jugular dialysis catheter tip in the inferior vena cava

Below level of diaphragm

Split tip: Reverse lines

Courtesy Dr Soundararajan
CATHERETER KINK
EARLY DYSFUNCTION

- CXR
- Change in position- Trendelenburg
- Remove tight sutures
- Split catheter: red end medial- away from vessel wall- where larger POOL of blood available
# LATE DYSFUNCTION

<table>
<thead>
<tr>
<th>PATHOLOGY</th>
<th>SYMPTOMS</th>
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<tbody>
<tr>
<td>Fibrin sheath</td>
<td>Ability to infuse but not to aspirate</td>
</tr>
<tr>
<td>Mural thrombus</td>
<td>As above, Engorged vessel</td>
</tr>
<tr>
<td>Intraluminal thrombus</td>
<td>Inability to infuse or aspirate from ports</td>
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</table>
• You are consulted to evaluate a 50y/o woman with a LIJ symmetric tip TDC x 6 months. The nurse tells you she is able to flush the catheter but not aspirate from either port. The blood flow as been repeatedly < 250cc/min inspite of using tPa now x 2 weeks.

You suspect:
- Intraluminal thrombus
- Thrombus around the catheter tip: Mural
- Fibrin sheath
MANAGEMENT- FS

• Balloon disruption (8-12mm) with exchange

• > separation of tips with split tip catheters
• A 45 y/o AAM with a RF TDC (split tip). This AM, the nurse was able to aspirate a little only from both ports. Hence tPa was placed in both ports x 30mins. Following this, flow was still not restored inspite of port reversal.

You suspect the following

1. Intraluminal thrombus
2. Fibrin sheath
3. Mural thrombus
MANAGEMENT

• < 1cm
  – Remove TDC. No anticoagulation

• > 1cm
  – Anti-thrombotic x 3m
  – Anti-thrombotic + place TDC elsewhere
  – Anti-thrombotic + exchange in the same place if no other sites available (longer catheter)
  – ECHO to check resolution
40 y/o with a RIJ **split tip** TDC x 3 months: Nurse unable to aspirate from the arterial port. The nurse has tried to forcefully flush the arterial port with no success.

You suspect:
1. Arterial port thrombus
2. Fibrin sheath
3. Kink
LATE DYSFUNCTION

• Forceful saline flush**

• Intraluminal lytic enzyme:
  – If < 2 weeks: Exchange TDC
END
• A 46y/o AAF, with a RIJ split cath since Aug 2016 referred for poor flow inspite of repeated tpa for a few weeks. Arterial port pressure drops. On line reversal, arterial port pressure rise.

You suspect:
1. Arterial port thrombus
2. Fibrin sheath
3. Malpositioned tip
On the TABLE, I was able to flush & aspirate both ports
- Filling defects
- Reflux of contrast material along the proximal shaft of the catheter with efflux from defects in the sleeve
- Excessive ejection of contrast material from the side holes of the proximal port
- Lack of a contrast material jet flowing from the proximal port distally into the right atrium
CATHETER TIP RETRACTION

Courtesy: Dr Beathard