PREVENTION AND TREATMENT OF ANEURYSMS OF AUTOGENOUS DIALYSIS ACCESSES

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THE INCREASE IN THE CONSTRUCTION OF AUTOGENOUS FISTULAE OVER THE PAST TEN YEARS HAS BROUGHT WITH IT

* 1. FEWER INFECTIONS
* 2. INCREASED PATENCY
* 3. FEWER HOSPITALIZATIONS
* 4. FEWER PROSTHETIC GRAFTS FOR DIALYSIS ACCESS
1. MORE INTERVENTIONAL PROCEDURES FOR DILATATION, EVALUATION, AND DECLOTTING OF AUTOGENOUS FISTULAE

2. AN INCREASE IN THE NUMBER OF ANEURYSMS OF DIALYSIS FISTULAE

3. AN INCREASE IN THE USE OF TUNNELED DIALYSIS CATHETERS AND THE TIME THEY REMAIN IN PATIENTS.
POSSIBLE ETIOLOGIES OF ANEURYSMAL DILATATION OF AUTOGENOUS DIALYSIS ACCESS FISTULAE

1. THIN WALLED VEIN SUBJECTED TO ARTERIAL PRESSURES AND TRAUMA OF REPETITIVE NEEDLE STICKS
2. HYPERTENSION
3. PROXIMAL STENOsis IN THE FISTULA INCREASING PRESSURE FURTHER ON VEIN WALLS
4. OCCULT COLLAGEN DISORDER IN SOME PATIENTS
5. THE OVERALL REPORTED INCIDENT REPORTED IN THE LITERATURE HAS BEEN 5-7% - IN THIS STUDY IT WAS 4.6%
WALL THICKNESS COMPARISON

ARTERY

VEIN
TYPES OF ANEURYSMS

- 1. ANEURYSMS OF AN EXTENSIVE PORTION OF THE FISTULA PRIMARILY DUE TO HYPERTENSION
- 2. ANEURYSMS DUE TO NEEDLE STICKS AND HYPERTENSION
- 3. SMALL ISOLATED ANEURYSMS DUE TO TRAUMA OF NEEDLE STICKS
- 4. ANEURYSMS DUE TO INFECTION
METHODS

* 1. REVIEWED OVER AN ELEVEN YEAR PERIOD THE DEVELOPMENT OF ANEURYSMS IN RENAL FAILURE PATIENTS WITH AUTOGENOUS FISTULAE IN A SINGLE SURGEON’S PRACTICE
* 2. ALL PATIENTS WITH AUTOGENOUS FISTULAE WERE INCLUDED
* 3. THOSE PATIENTS WITH ANEURYSMAL DILATATION >2.0 CM WERE INCLUDED
* 4. THE METHODS OF TREATMENT AND THEIR SUCCESS WERE TABULATED
IN THE ELEVEN YEAR PERIOD (2000-2010) THERE WERE A TOTAL OF 571 AUTOGENOUS FISTULAE CONSTRUCTED

* 1. 174 CIMINO FISTULAE
* 2. 269 BRACHIAL-CEPHALIC FISTULAE
* 3. 36 MIDFOREARM TRANSPOSITION OF THE CEPHALIC VEIN
* 4. 92 BASILIC / BRACHIAL VEIN TRANSPOSITIONS

* THERE WERE 23 PATIENTS WITH 26 (4.6%) SIGNIFICANT ANEURYSMS
RESULTS

* 3 ANEURYSMS IN CIMINO FISTULAE 1.7%
* 18 ANEURYSMS IN 17 PATIENTS WITH BRACHIAL-CEPHALIC FISTULAE 5.9%
* 4 ANEURYSMS IN 4 PATIENTS WITH BASILIC VEIN TRANSPOSITIONS (5.4%)  
* 1 ANEURYSM IN A TRANSPOSED FOREARM CEPHALIC VEIN (2.7%)

* TREATMENT CONSISTED OF
  * 1. OBSERVATION
  * 2. DILATATION OF A STENOSIS
  * 3. PLACEMENT OF A STENT
  * 4. LIGATION
  * 5. PLACEMENT OF INTERPOSITION GRAFT OF SAPHENOUS VEIN OR PROSTHETIC GRAFT
  * 6. ISOLATED REPAIR IN AREA OF INJURY/ANEURYSM
RESULTS

1. PATIENT POPULATION 12 MALES, 11 FEMALES;
2. AVERAGE AGE 51.74
3. ALL PATIENTS WERE HYPERTENSIVE; 11 HAD DIABETES;
4. THREE PATIENTS (TWO MALES, ONE FEMALE) HAD TWO SEPARATE ANEURYSMS IN DIFFERENT FISTULAE
5. TIME UNTIL THE APPEARANCE OF THE ANEURYSM AVERAGED 32.7 MONTHS WITH A RANGE FROM 8 - 81 MONTHS
1. OBSERVATION IN ONE PATIENT (BY REQUEST)

2. FIVE PATIENTS HAD DILATATION OF A PROXIMAL STENOSIS ALL OF WHICH WERE SUCCESSFUL IN MAINTAINING THE FISTULA

3. TWO PATIENTS HAD STENTS PLACED WITHIN THE ANEURYSMAL PART OF THE FISTULA – BOTH FAILED

4. EIGHT PATIENTS HAD AN INTERPOSITION PROSTHETIC GRAFT – SIX FAILED
RESULTS OF TREATMENT (CONT.)

* 5. ONE PATIENT HAD AN INTERPOSITION GRAFT OF AUTOGENOUS TISSUE SUCCESSFUL
* 6. FOUR PATIENTS HAD STENT PLACEMENT IN A MORE CENTRAL LOCATION – ALL SUCCESSFUL
* 7. SIX PATIENTS HAD LIGATION OF THE ANEURYSM TWO WITH AN INFECTED ANEURYSM AND TWO S/P TRANSPLANT
1. STENTS PLACED IN THE FISTULA DO NOT WORK; THEY WILL EVENTUALLY ERODE THROUGH THE SKIN AND BECOME INFECTED

2. STENTS DO WORK IN A MORE CENTRAL LOCATION (NOT IN THE DIALYSIS PORTION OF THE FISTULA)

3. DILATATION OF STENOSES EFFECTIVE IN DECREASING THE PRESSURE AND RAPID EXPANSION OF THE ANEURYSM; THUS PROLONGING THE LIFE OF THE FISTULA
4. INTERPOSITION PROSTHETIC GRAFTS AROUND ANEURSYMAL DILATATION RARELY WORK AND NEGATE THE ADVANTAGE OF AN AUTOIGENOUS FISTULA

5. LIGATION MAY BE THE ONLY OPTION IN PATIENTS WITH AN INFECTED FISTULA AND/OR HAVE NO NEED FOR DIALYSIS ACCESS

6. IN SOME PATIENTS DIRECT REPAIR OF ANEURYSM MAY BE THE BEST OPTION
1. ALL ATTEMPTS AT CONTROL OF HYPERTENSION MUST BE USED
2. AVOIDANCE OF REPETITIVE STICKS IN THE SAME LOCATION DURING DIALYSIS
3. EARLY EVALUATION AND CONSIDERATION OF DILATATION OF AREAS OF STENOSIS TO PREVENT CONTINUING ENLARGEMENT OF AN ANEURYSM
4. WHEN TREATMENT OF ANEURYSM NECESSARY SURGERY IS USUALLY THE BEST ALTERNATIVE
ANEURYSMS OF AUTOGENOUS FISTULAE ARE A DIFFICULT PROBLEM WITH NO SIMPLE ANSWER – THE BEST SOLUTION IS TO BE PROACTIVE AND PREVENT THEIR DEVELOPMENT AND/OR SLOW THEIR GROWTH
The presence and development of autogenous aneurysms was reviewed over the past 11 years.

1. This was done in one surgeon’s practice (so lack of variability and consistent technique).

2. All autogenous fistulæ develop some aneurysmal dilatation over time but just those with significant size increase > 4.0 cm were included.

3. The number and location were tabulated as well as their treatment.