



*n-Pump Surgery for Tumors  
Infiltrating the Heart and  
Inferior Vena Cava*

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# Introduction and Aim

- It is well known that formation of **tumor thrombus** in inferior vena cava and right atrium in patients with **abdominal masses** is a predictor for very short survival.
- Etiology of tumor thrombus:
  - **Hepatic** masses;
  - **Adrenal** masses;
  - **Renal & Retroperitoneal** masses;
  - **Pelvic** masses.
- The aim of this work is to review our experience with **on-pump** surgical treatment of patients with abdominal tumors, infiltrating the heart and inferior vena cava.



# Patients & Surgical Technique

- **Period:** 2009 – 2012;
- **Patients:**
  - 17 patients (12 m and 5 f)
  - Average age 59 years (from 25 to 78).
- **Primary tumor:**
  - Hepatic – 2; Adrenal – 1; Renal – 13; Pelvic – 1;
- **Hybrid team:**
  - Cardiac surgeon; Urologist; General surgeon
- **Hybrid access:** Sternotomy & Laparotomy
- **On-pump:**
  - Aorta; Femoral vein; Superior vena cava.
  - Mild hypothermia 32 C.
  - Occlusion of IVC in **thorax** with tourniquet **before** tumor extraction.
  - Occlusion of renal vein(s) and occlusion of IVC in **abdomen below the tumor thrombus**, before thrombectomy and suture of IVC.





# Results

- **Radical Tu extraction and IVC thrombectomy – 100%.**
- **Mortality:** 2 patients;
- **Modes of death:** Massive pulmonary embolism – 1; multi organ failure – 1.
- **Complications:** re-exploration for bleeding – 2; CVVH – 3.
- **Discharged home:** 15 patients.
- **Average hospital stay:** 10 days (from 7 to 15 days)
- **Histology:**
  - Hepatic: Hepatocellular carcinoma – 1 patient; Leiomyosarcoma – 1 patient;
  - Adrenal: Adrenocortical carcinoma – 1 patient;
  - Renal: Hypernephroma – 13 patients;
  - Pelvic: Leiomyoma – 1 patient.
- No late deaths during the follow up.
- **Recurrence:** 1 patient with hepatic leiomyosarcoma.





# Conclusions

- Our present results show that:
  - ✓ On-pump surgery guarantees **radical tumor extraction**;
  - ✓ Multy-disciplinary team is mandatory;
  - ✓ Perioperative mortality and morbidity is **acceptable**;
  - ✓ Mid-term results are **good**.
  - ✓ Long-term are expected.



Thank you for your attention!

