

"Implantable Catheter Chamber: Insights from a Study of 53 Cases (Service Experience)"



Dr Bouchra KARAR, Dr Abderrahim SMILI, Pr Benaoumeur SALEM
Faculty of Medicine of Oran - Regional University Military Hospital of Oran

Introduction

The implantable catheter chamber has become an essential method in recent times for the management of cancer patients, both for the administration of chemotherapy and for pain treatment. Our study aims to evaluate the complications that may occur during placement and postoperative period

Methods

A retrospective study was conducted over a period of one year (October 2018 to September 2019), including all implanted chambers whose main indication was to initiate anti-cancer chemotherapy. This study was conducted in the department of thoracic and cardiovascular surgery at the Regional University Military Hospital of Oran.

Surgical Technique

In all cases, the placement of the implantable catheter chamber (ICC) was performed during a surgical procedure, in the operating room by a vascular surgeon under aseptic conditions, using local anesthesia (LA) with 2% Lidocaine.

In our study, the preferred approach was transcutaneous venous puncture. The most commonly used approach was the right internal jugular vein in 47 patients, accounting for 88% of cases, followed by the left subclavian vein (LSV) in 5 patients, representing 9.5% of cases, and 1 case via the left internal jugular vein.

Operational difficulties: The procedure was straightforward in 50 patients, accounting for 94.33% of cases, while it was difficult in 5.66% of cases. The difficulty in catheter placement was associated with the inability to advance the catheter.

Postoperative outcomes were uncomplicated in 90.56% of cases, with five (5) patients experiencing complications:

Two patients developed thrombosis of the right internal jugular vein.

Two patients experienced hematoma, quickly resolved by compression.

One patient had an aberrant pathway, which will be described later.

All patients were hospitalized in our department for no more than 24 hours. In all our patients, the outcome was favorable.

Observation

We present the case of a 34-year-old female patient with a history of nephrectomy for stage IV nephroblastoma followed by oncology treatment for the management of right breast neoplasia. She underwent right mastectomy requiring additional therapy, hence she was referred to our department for the placement of an implantable chamber.

The patient was admitted to the operating room and underwent the placement of an implantable chamber via the left subclavian vein. However, on the same day, it was discovered that the catheter had an aberrant pathway. Subsequently, a re-implantation was performed via the left internal jugular vein.



Discussion

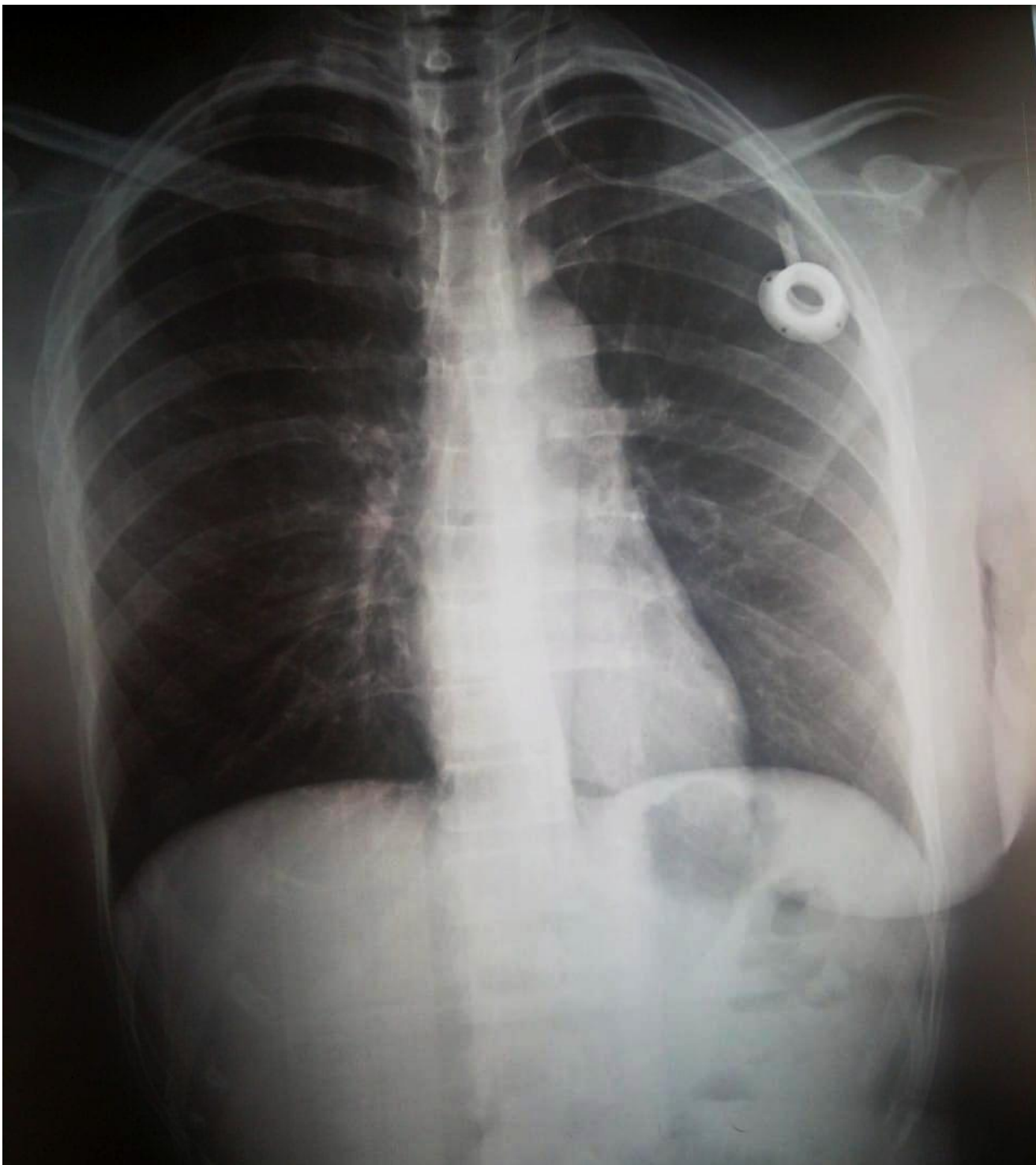
The use of implantable catheter chambers since the 1980s has allowed for the administration of cytotoxic agents through permanent and prolonged access to the central venous system, aiming to preserve the patient's venous capital and comfort. The procedure can be performed under local or general anesthesia according to the surgeon's and patient's preference [1]. While surgical approach is mostly considered a standard due to its ease, efficacy, and safety, the percutaneous approach presents an interesting alternative, providing direct access to the deep venous system, albeit with the risk of arterial and pleural puncture. However, their low incidence described in the literature does not solely justify preferring the surgical approach [2, 3].

In our study, all patients underwent the placement of the implantable catheter chamber via the percutaneous approach. Our preference for the right side is based on anatomical reasons; however, we opted for the left side due to certain contraindications (right mastectomy). Fifty-three patients underwent the placement of an implantable catheter chamber, including 12 men and 41 women. All patients underwent postoperative radiographic control.

Perioperative incidents included difficulties in puncture (2 cases), subcutaneous hematoma (1 case), and one case of aberrant pathway. Surgical site infection represents the most frequent complication during the placement of implantable catheter chambers in most studies, despite aseptic measures. Staphylococcus aureus is the commonly found pathogen in the literature [4]; however, no cases of infection were observed in our series.

Subcutaneous hematoma was diagnosed immediately postoperatively and quickly resolved with compressive dressing. Short-term or long-term complications were present in 3.77% of cases, including 2 cases of venous thrombosis. Venous thrombosis was evidenced by swelling in the neck and arm with associated pain and heaviness of the limb. Doppler ultrasound confirmed the diagnosis and specified the location in the right internal jugular vein, which was managed by initiating heparin therapy.

No cases of pulmonary embolism or pneumothorax were observed in our patients. There were no surgical site infections or catheter migrations due to disconnection. There was no mortality associated with the placement procedure in our series



	Rouzrokh 2009 524 cases	Goltz 2010 763 cases	2010 970 cases [4]	Our study
Pneumothorax	--	--	0.1%	--
Surgical site infection	8.8%	5.4%	1.5%	--
Subcutaneous hematoma	1.1%	--	1.7%	3.77%
Venous thrombosis	6.1%	8.5%	1.9%	3.77%
Catheter migration	6.7%	0.1%	0.4%	--
Aberrant pathway	--	--	--	1.88%

Conclusions

The placement of implantable catheter chambers has become indispensable in modern healthcare due to the improved quality of patient care, particularly in the permanent and prolonged administration of anti-cancer chemotherapy and preservation of venous capital. It also contributes to the quality of life and comfort of patients. The results of this study are satisfactory and consistent with the literature.

References

1. Schuld J, Richter S, Moussavian MR, Kollmar O, Schilling MK. A totally implantable venous access device-Implantation in general or local anaesthesia? A retrospective cost analysis. Zentralbl Chir. 2009;134(4):345–349. [\[PubMed\]](#) [\[Google Scholar\]](#)

2. Rouzrokh M, Shamsian BS, KhaleghNejad Tabari A, Mahmoodi M, Kouranlo J, et al. Totally implantable subpectoral vs subcutaneous port systems in children with malignant diseases. Arch Iran Med. 2009;12(4):389–394. [\[PubMed\]](#) [\[Google Scholar\]](#)

3. Yeste Sánchez L, Galbis Caravajal JM, Fuster Diana CA, Moledo Eiras E. Protocol for the implantation of a venous access device (Port-A-Cath System). The complications and solutions found in 560 cases. Clin Transl Oncol. 2006 Oct;8(10):735–41. [\[PubMed\]](#) [\[Google Scholar\]](#)

4. Les chambres à cathéters implantables: à propos d'une série de 970 cas Hassane El Kabiri,1,& Massine El Hammoumi,1 Akram Traibj,1 Faycal El Oueriachj,1 et Adil Aarsalane1