SJIF Impact Factor: 5.464

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 4.
Issue: 1.
Page N. 169-172
Year: 2020

Original Article www.wjahr.com

CARINA RECONSTRUCTION SURGERY: INDICATIONS, TECHNIQUES AND RESULTS

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Received date: 06 December 2019 **Revised date:** 27 December 2019 **Accepted date:** 17 January 2020

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SUMMARY

Introduction: Indications for carina surgery are rare, limited to tumors of the lower trachea or the main bronchi, offering carcinologic resection R0 and a better prognosis at the expense of a operative tactic specially adapted to each case It's about a Retrospective study about 5 cases, benefiting from a resection of the hull with or without pulmonary resection, associated with a carinoplasty under different techniques (8 years), 3 men and 2 women, whose average age was 41 years. The radiological assessment objectified a central tumor process (Hilar 2cases, subcarinary 2cases, endobronchial 1case), associated with mediastinal lymphadenopathy in 4cases and an aspect of right lung destroyed in 3cases. By a right postero lateral thoracotomy (4cases) and a sternotomy (1cases), the gestures carried out were: right intrapericardial pneumonectomy enlarged to the carina with reconstruction by a KERGIN type (1case), inverted KERGIN (1case), a V-plasty 1 case); tumor excision enlarged to the carina with angular section and V-shaped plasty (1case); resection of the carina with tracheobronchial anastomosis in double rifle barrel (1 case), associated with radical mediastinal lymph node dissection. The histological diagnosis was : moderately differentiated ADK, poorly differentiated carcinoma, mucoepidermoide carcinoma, typical carcinoid tumor (2cases). During an average follow-up of 4.75 years, an immediate postoperative death and a recurrent cervical lymph node were noted **Conclusion:** Carinoplasty is technically difficult, requiring perfect collaboration between pulmonologists, surgeons and anesthesiologists, to deal with a problem linked to: approaches, mobilization techniques, type of resection-anastomosis and postoperative.

KEYWORDS: Indications for carina surgery postoperative.

INTRODUCTION

Indications for carinal surgery is rare. they mainly concern the pathologies of the tracheobronchial crossroads, both malignant and benign. Among the malignant pathologies the tumors of the lower trachea or main bronchi are the most frequent, carinal damage classed this tumors T4 which represents less than 1% of the operated bronchopulmonary cancers, may be secondary to lymph node involvement or by regional spread by the tumor itself. Concerning the benign pathologies these are mainly interesting structure affecting the last few centimeters of the lower trachea. Before this heavy surgery the practitioner is confronted with 2 imperatives that of carcinologic resection R0 offering a belter prognosis despite the difficulties of intraoperative ventilation.

The second imperative is linked to technical difficulties of the anastomosis as evidenced by the incongruence between the trachea bronchial sections to be anastomosed.

In order to bring our experience in carinal reconstruction surgery we conducted this retrospective study.

MATERIAL AND METHODS

This is a retrospective descriptive study covering 5 cases from 2010-2018, either a duration of 8 years, which took place in thoracic surgery department CHU-HASSAN II, we reviewed the records of all patients who underwent tracheal anastomosis resection, and we were specifically interested in those whose technique required a carinal reconstruction, also for each file we noted the epidimiological charachters (age, sex, clinical history) clinical and radiological signs the surgical indication, the operative technique as well as short and long term results. All the data collected were transferred to a file and then processed with excel software.

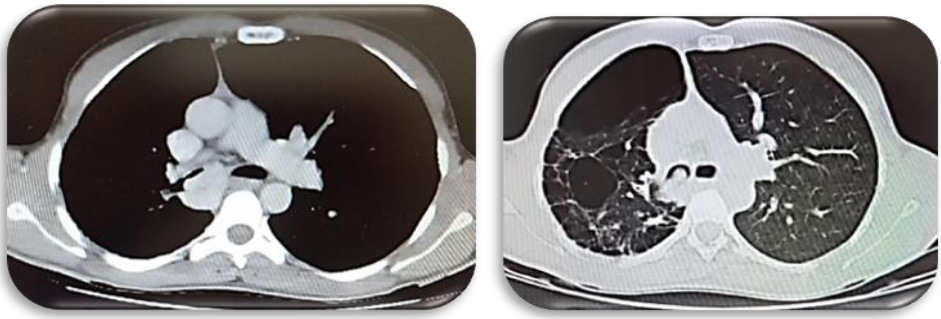

Figure 1: Thoracic CT C, mediastinal section showing a tumor of the right stem bronchus invading the carina, with appearance of destroyed right lung.

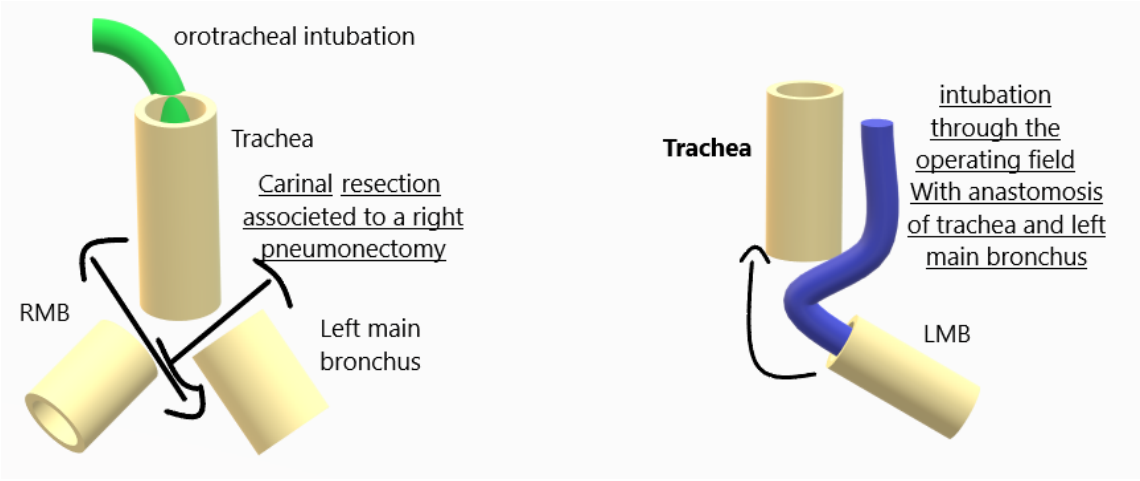

Figure 2: 3D demonstration for intubations through the operating field.

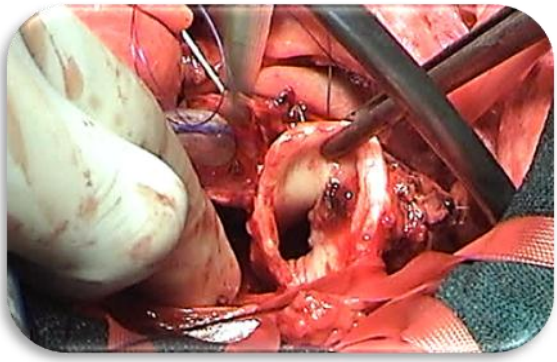

Figure 3: Resection of the carina through a sternotomy, with intubation of the left main bronchus across the operating field, with the presence of tumor residue on the right main bronchus, resected with an extemporaneous examination of the resection margins.

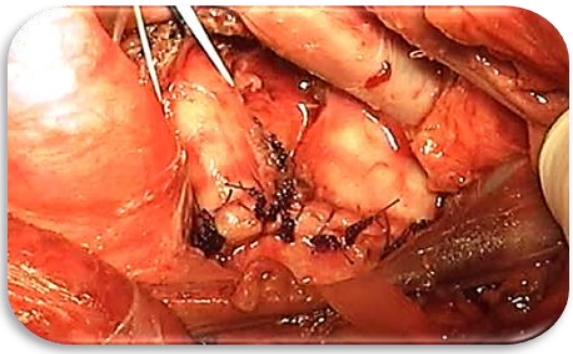

Figure 4: Double gun barrel carinoplasty after carina resection.

RESULTS

There were 3 men and 2 women with an average age of 41 years with extremes ranging from 28 to 45 years the clinical history found a notion of active smoking in 2 patients, a repetitive pneumonia in 2 other patients and a notion of pulmonary tuberculosis in one case. the average of the symptomatology at the time of diagnosis was 15.5 months with a minimum of 3 months and a maximum of 4 years. Clinical signs on admission were dominated by intermittent hemoptysis (N=4), dyspnea (N=2) and non-systematized chest pain (N=2). The thoracic computed tomography performed in all patients was in favor of a central seat tumor process. (Figure 1) associated with mediastinal lymphnodes in 4 cases and a destroyed lung in 3 cases. To complete the preoperative assessment, a bronchial fibroscopy had confirmed the presence of an endobronchial tumor process obstructing more than 50% of the bronchial lumen sitting on the right main of the root bronchus less than 1 cm from the carinal way in 2 patients. the bronchial biopsy had confirmed the histological diagnosis while in 2 other patients, it was the endoscopic aspect which had suspected the macroscopic character of a carcinoid tumor. To better assess tumor extension, a CT scan of the skull, abdomen and pelvis allowed to classify the patients in T^4,N^1,M^0,(2 cases), T4N0M0 (2 cases) and T4N2M1(1case). All patients were hospitalized 48 hours before for preoperative preparation with a respiratory physiotherapy, nebulization and humidification of air.

Surgically, the approach was a posterolateral thoracotomy in (4 cases) and a sternotomy in one case. we used a sequential intubation with an orotracheale intubation first and then intubation in the operating field at the time of the gesture (Figure 2). Resection of the carina was associated with right intra pericardial pneumonectomy in 3 cases. The carinal reconstruction consisted of a KERGIN plasty in 1 case, an inverted KERGIN plasty in 1 case, a V-shaped plasty tracheobronchial anastomosis in a double rifle barrel in the other case (Figure 3.4). For all patients, we performed a radical lymph node dissection, as well as the protection of the bronchial stump (by thymic fat in 2 cases and by pleural flap in 3 cases). The average hospital stay was 10 days. All the patients had benefited from a postoperative bronchial fibroscopy on the 7th day which had shown good healing of the anastomosis.

The anatomopathological examination of surgical specimen was in favor of a moderately differentiated adenocarcinoma in 1 case, little differentiated caracinoma in 1 case, carcinoma epidermal mucus in 1 case and a typical carcinoid tumor in 2 cases. The bronchial cuts were healthy and the tumors were classified PT4NOMO for the 4 patients and T4N1M0 in the last patient who benefited from a radiotherapy chemotherapy with an average follow up of 4.75 years and who presented cervical lymph node recurrence after 6 years of evolution. he had benefited from a lymph node dissection then chemotherapy with a good evolution to date.

DISCUSSION

Locating a tumor at the tracheobronchial crossroads remains a challenge for thoracic surgeons. Historically rarely operated, 5 years survival was around 15 to 20%. The evolution of the surgical technique has enabled today, carcinology RO resection in well selected patients. In most cases, these tumors are classified as T4N0M0 stage IIIA without N2 lymph node involvement. The reconstruction of the carina was initially reported by Barclay and his collaborators in 1957.[1] This risky surgery requires perfect mastery of the different operating times, from anesthesia to postoperative operations. Thus, the anesthetic management of these patients presents several relative challenges, from intuhation to ventilation with appropriate oxygenation depending on the surgical procedure, the intubation technique can be divided into 3 large groups (I) left endobronchial intubation with a single lumen intubation probe: (II) ventilation through the operating field; (III) Jet Ventilation.[2]

Several surgical approaches have been reported; the right posterolateral thoracotomy through the 4th intercostal space gives an excellent exposition of the tracheal bifurcation including the first centimeter of the left main bronchus. The stermotomy is ideal for tracheobronchial resection-reconstruction but does not allow a parenchymal resection, in this context the mixed Grillo remains invasive while combining the advantage of the 2 previous routes. If the resection of the carina is accompanied by a parenchymatous resection, it can be either a partial angular or total resection with Kkj, nergin plasty or reverse Kergin plasty or by technique of overlock of cooley. In case of carinal resection alone, the tracheobronchial anastomosis is done either by barcley technique or in double rifle barrel. At present, the main method used is the Barclay method, but postoperative complications are not uncommon and the postoperative mortality rate is high.[3,4]

This surgery represents typical complications such as anastomosis which can lead to empyema or even mediastinitis. Protecting the anastomosis by mobilization of the surrounding tissues such as the thymus can avoid such complications. Anastomotic stenosis is a dreaded complication requiring fibroscopic control especially during the postoperative period. Some authors during a resection have demonstrated that the morbidity rate is 22% during a parenchymal resection for cancer, whereas it reaches 53% during a Parenchymal resection associated with carinal resection.[5]

CONCLUSION

The resection reconstruction of carina is a technique that used to be difficult but it’s now made possible thanks to

the many advances both on the anesthetic level and on the mastery of the operating technique.

REFERENCES

1. Barclay, R.S., MacSwan, N. & Welsh, T.M. Tracheal reconstruction without the use of grafts. Thorax, 1957; 12: 177-182.
2. Shin S, Park JS, Shim YM, et al. Carinal resection and reconstruction in thoracic malignancies. J Surg Oncol, 2014; 110: 239-44.
3. Grub, H.C. Carinal reconstruction. Ann. Thorac. Surg., 1982; 34: 356-373.
4. Porhanov VA, Poliakov IS, Selvaschuk AP, et al. Indications and results of sleeve carinal resection. Eur J Cardiothorac Surg, 2002; 22: 685-94.
5. Pearson FG, Todd TR, Cooper JD. Experience with primary neoplasms of the trachea and carina. J Thorac Cardiovasc Surg, 1984; 88: 511-8.