Cancer Association of South Africa (CANSA)

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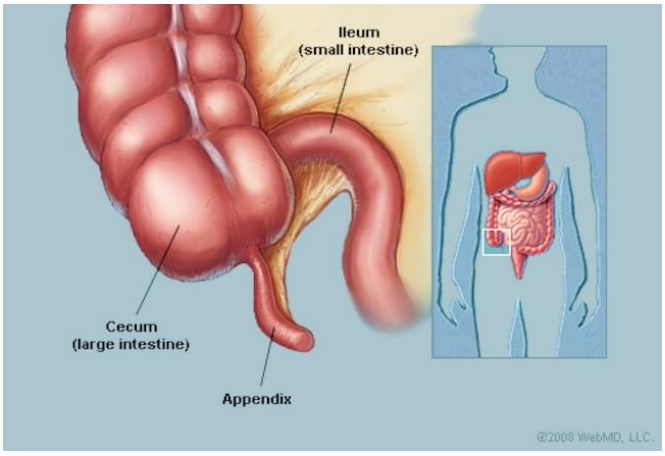
Fact Sheet
on
Appendix Cancer

Introduction

The appendix (formally known as the vermiform appendix) is situated at the junction of the small intestine and the caecum of the large bowel. It is a thin tube-like structure, approximately 10cm long.

The function of the appendix is mostly unknown, although one theory has it that the appendix acts as a storehouse for good bacteria, which "reboots" the digestive system after events of diarrhoea. Others believe the appendix is just a remnant from the evolutionary past of human beings. Surgical removal of the appendix does not cause any no apparent or observable health problems.



[**Picture Credit**: Appendix]

Appendix Cancer

Appendix cancer is sometimes called appendiceal cancer. It is considered to be one of the rare cancers. It occurs when healthy cells of the appendix become abnormal and grow and multiply in an uncontrolled fashion. These cancerous cells then form a mass or tumour inside the appendix. When the tumour is malignant, it is said to be cancerous.

Hatch, Q.M. & Gilbert, E.E. 2018.

"Appendiceal neoplasms are identified in 0.9 to 1.4% of appendiceal specimens, and the incidence is increasing. It has long been professed that neuroendocrine tumors (formerly carcinoids) are the most common neoplastic process of the appendix; recent data, however, has suggested a shift in epidemiology. Our intent is to distill the complex into an algorithm, and, in doing so, enable the surgeon to seamlessly maneuver through operative decisions, treatment strategies, and patient counseling. The algorithm for evaluation and treatment is complex, often starts from the nonspecific presenting complaint of appendicitis, and relies heavily on often subtle histopathologic differences."

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Incidence of Appendix Cancer
The National Cancer Registry does not provide any information on the incidence of Appendix Cancer.

"Appendiceal cancer is a rare and potentially aggressive malignancy. Although appendiceal cancer is rare, the incidence increased significantly in the USA from 2000 to 2009. The cause of this trend is not obvious. Our rsearch did not observe increases differentially associated with stage, histology, or demographic characteristics. Further investigation is needed to examine factors underlying this increase." (Marmor, *et al.*, 2015).

Types of Appendix Cancer
Appendix cancer types are categorised based on the type of cells involved and what the cells look like under a microscope. The cell types are named for their behaviours (i.e. likelihood of spreading to other organs or other parts of the body, rate of growth, ability to be removed with surgery, etc.).

The two main types of Appendix Cancer are called neuroendocrine tumours and carcinomas.

- **Neuroendocrine (carcinoid) tumours (NET)** are the most common appendix cancers, making up about half of those diagnosed. They are most often found in women in their 40s. These tumours begin in the hormone-producing cells and are typically found after the appendix has been removed. Most carcinoid tumours are small and difficult to diagnose because they are not visible on routine imaging studies. Surgery is often the first-line treatment.
- **Carcinomas** begin in the tissue that lines the appendix. Carcinomas of the appendix include:
  - Mucinous adenocarcinoma: These tumours are the second most common type of appendix cancer. They begin in the appendix and produce mucin, a jelly-like substance that tends to spread cancerous cells to other parts of the body. These tumours are often discovered after they have metastasized to the peritoneum (the lining of the abdominal cavity).
  - Goblet cell carcinoids (also called adenocarcinoid tumours): These are less common tumours, which, despite the name, are not carcinoid tumours. Goblet cell carcinoids behave and are treated similarly to mucinous adenocarcinoma. They are often more aggressive than carcinoid tumours and typically develop in patients over the age of 50.
  - Intestinal-type adenocarcinoma (also called colonic-type adenocarcinoma): These tumours account for about 10 percent of appendix tumours and are usually found near the base of the appendix. When these tumours cause symptoms, they often mimic the symptoms of colorectal cancer
  - Signet-ring cell adenocarcinoma: This is a very rare but aggressive type of appendix cancer that typically occurs in the stomach or colon. When it develops in the appendix, it often causes appendicitis. It is called signet-ring cell adenocarcinoma because, under the microscope, the cell looks like it has a signet ring inside it.

Signs and Symptoms of Appendix Cancer
Individuals with appendix cancer may experience some or all of the following symptoms or signs. Sometimes, people with appendix cancer do not have any of these changes, or the cause of a symptom may be a different medical condition that is not cancer:
- Inflammation of the Appendix - appendicitis
- Ascites – build-up of fluid in the abdomen
- Bloating

- Pain in the abdomen or pelvis area
- Increased girth (size of the waistline)
- Changes in bowel function

Votanopoulos, K.I., Shen, P., Skardal, A. & Levine, E.A. 2018. Peritoneal metastases from appendiceal cancer. Surg Oncol Clin N Am. 2018 Jul;27(3):551-561. doi: 10.1016/j.soc.2018.02.007.
"The early symptoms of appendiceal cancer may mimic the clinical picture of appendicitis. Most patients are diagnosed incidentally during surgical exploration or late when peritoneal or systemic dissemination has already occurred, as colonoscopy rarely will diagnose an appendiceal cancer. Systemic/extraperitoneal metastases are distinctly unusual for appendiceal mucinous lesions."

Appendix Cancer Risk Factors

Anything that increases one's chance of getting appendix cancer is a risk factor. Risk factors include:

- Smoking tobacco
- Gender: Women are more likely to develop carcinoid tumours than men
- Certain health conditions, such as atrophic gastritis, pernicious anaemia or Zollinger-Ellison syndrome, which affect the stomach's ability to make acid
- Having a family history of multiple endocrine neoplasia Type 1 (MEN1) syndrome, a disorder also called endocrine adenomatosis and Wermer syndrome

Not everyone with risk factors gets appendix cancer. However, if someone has risk factors, they should discuss them with their doctor.

Enblad, M., Graf,W. & Birgisson, H. 2018.
"Early diagnosis to target minimal volume disease has received increased attention in the management of appendiceal and colorectal peritoneal metastases (PM). This study aimed to identify risk factors for appendiceal, colon and rectal PM.
"Synchronous PM was most common in appendiceal cancer (23.5%), followed by colon (3.1%) and rectal (0.6%) cancer. The 5-year cumulative incidence was 9.0% for appendiceal, 2.5% for right colon, 1.8% for left colon and 1.2% for rectal cancer. In appendiceal cancer (n = 327), T4, N2, mucinous tumour, and non-radical surgery were associated with PM. In colon cancer (n = 24,399), synchronous PM were primarily associated with T4 (OR 18.37, 95% CI 8.12-41.53), T3 and N2 but also with N1, right-sided tumour, mucinous tumour, vascular and perineural invasion, female gender, age <60 and emergency surgery. These factors were also associated with metachronous PM. In rectal cancer (n = 10,394), T4 (OR 19.12, 95% CI 5.52-66.24), proximal tumour and mucinous tumour were associated with synchronous PM and T4 and mucinous tumour with metachronous PM.
"This study shows that appendiceal cancer, right-sided colon cancer, advanced tumour and node stages and mucinous histopathology are the main high-risk features for PM and should increase the awareness of current or future PM."

Diagnosis of Appendix Cancer

For most types of cancer, a biopsy is the only sure way for the doctor to know if an area of the body has cancer. In a biopsy, the doctor takes a small sample of tissue for testing in a laboratory. If a biopsy is not possible, the doctor may suggest other tests that will help make a diagnosis.

This list describes options for diagnosing appendix cancer. Not all tests listed will be used for every person. One's doctor may consider these factors when choosing a diagnostic test:

- The type of cancer suspected
- Your signs and symptoms
- Your age and general condition
- The results of earlier medical tests

In addition to a physical examination, the following tests may be used to diagnose appendix cancer:

- **Biopsy.** A biopsy is the removal of a small amount of tissue for examination under a microscope. Other tests can suggest that cancer is present, but only a biopsy can make a definite diagnosis.
- **Computed tomography (CT or CAT) scan.** A CT scan takes pictures of the inside of the body using X-rays taken from different angles. A computer combines these images into a detailed, cross-sectional view 3-dimensional or 3-D that shows any abnormalities or tumours
- **Magnetic resonance imaging (MRI).** A MRI uses magnetic fields, not X-rays, to produce detailed images of the body. MRI can be used to measure the tumour's size.
- **Ultrasound.** An ultrasound uses sound waves to create a picture of the internal organs
- **Radionuclide scanning (OctreoScan or 68Ga-DOTATATE PET scan).** These tests are used for neuroendocrine tumours and not other types of appendix cancers.
- After diagnostic tests are done, your doctor will review all of the results with you. If the diagnosis is appendix cancer, these results also help the doctor describe the cancer. This is called staging.

Shaib, W.L., Assi, R., Shamseddine, A., Alese, O.B., Staley, C 3rd., Memis, B., Adsav, V., Bekaij-Saab, T. & El-Rayes, B.F. 2017.

"Appendiceal mucinous neoplasms (AMNs) are a rare and heterogeneous disease for which clinical management is challenging. We aim to review the literature regarding modalities of treatment to guide the management of AMNs.

"In this review, we summarize current data and controversies in AMN classification, clinical presentation, molecular alterations, treatment outcomes with regard to cytoreductive surgery, hyperthermic intraperitoneal chemotherapy (HIPEC), and the role of systemic chemotherapy.

"Appendiceal mucinous neoplasms are a heterogeneous group of tumors with a rising incidence. Treatment is based on stage and histology. Low-grade tumors are treated surgically with resection of the primary site in early stage disease, or peritoneal debulking and HIPEC in patients with advanced stage disease. Treatment of high-grade tumors requires further prospective trials, and options include debulking surgery and HIPEC with or without preoperative chemotherapy. Trials evaluating novel therapies based on the molecular profiling of AMN tumors are needed to evaluate therapeutic options in patients who are not surgical candidates.

"This review provides a reference to guide gastroenterologists, pathologists, surgeons, and oncologists in the management of appendiceal mucinous neoplasms (AMNs), a rare and heterogeneous disease with no consensus on histologic classification or guidelines for treatment algorithms. This review summarizes all AMN classifications and proposes a treatment algorithm based on stage and histology of disease."

Toumpanakis, C., Fazio, N., Tiensuu Janson, E., Hörsch, D., Pascher, A., Reed, N., O'Toole, D., Nieveen van Kiikum, E., Partelli. S/. Rinke, A., Kos-Kuia, B., Costa, F., Pape, U.F., Grozinsky-Glasberg, S., Scoazer, J.Y. & ENETS 2016 Munich Advisory Board Participants. Neuroendocrinology. 2018.

"Appendiceal neuroendocrine neoplasms (ANEN) are mostly discovered coincidentally during appendicectomy and usually have a benign clinical course, thus appendicectomy alone is considered as curative. However in some cases a malignant potential is suspected and therefore additional operations, such as completion right hemicolectomy, are considered. The existing European Neuroendocrine Tumour Society (ENETS) guidelines provide quite useful data about epidemiology and prognosis, as well as, practical

recommendations with regards to the risk factors for a more aggressive disease course and the indications for a secondary operation. However, those guidelines are based on heterogeneous and retrospective studies. Therefore, the evidence does not seem to be robust and there are still unmet needs in terms of accurate epidemiology and overall prognosis, optimal diagnostic and follow-up strategy, and identified risk factors, which would indicate a more aggressive surgical approach at the beginning and a more intense follow-up. In this review, we are attempting a critical approach of ENETS guidelines and published series for ANEN, focusing on the above noted "grey areas".”

Van Hooser, A., Williams, T.R. & Myers, D.T. 2018.
“Mucinous appendiceal neoplasms are uncommon, but important to recognize with imaging due to malignant potential. Peritoneal seeding and pseudomyxoma peritonei can occur with both frankly malignant as well as low-grade appendiceal neoplasms. Prospective imaging identification of potential appendiceal neoplasm is paramount to clinical/surgical management.
“When a mucinous appendiceal neoplasm is suspected, a right hemicolectomy with lymph node dissection is the preferred surgical management. Unfortunately, accurate preoperative diagnosis can be challenging due to a wide range of clinical presentations and overlapping imaging appearances of appendiceal neoplasms with benign entities. Using the 2010 World Health Organization (WHO) pathologic classification as a framework, we provide a comprehensive multi-modality pictorial essay detailing the broad array of imaging findings of mucinous appendiceal neoplasms and common imaging mimics.”

Causes of Appendix Cancer
Appendix cancer causes are not well understood. Scientists have established that tumours can form in the appendix when its cells undergo abnormal changes and multiply at a very rapid pace. The excess cells can build up and form a tumour, which can potentially spread to other tissues and organs. There are no known causes of this abnormal cellular development.

Because there are also no reliable screening tests for this rare condition, which often produces no symptoms in its early stages, appendix cancer is often found incidentally after an individual seeks medical attention for vague abdominal pain. The cancer may be detected through diagnostic imaging scans or discovered during surgery to treat what was initially believed to be appendicitis. For these reasons, symptoms like severe abdominal pain, bloating and diarrhoea should never be ignored. Of course, these symptoms are very common and are usually linked to much less serious causes. Nevertheless, one of the few ways to detect appendix cancer is to pay close attention to and see a physician promptly about symptoms like these – especially if they do not go away on their own after a few days.

Valasek, M.A., Thung, I., Gollapalle, E., Hodkoff, A.A., Kelly, K.J., Baumgartner, J.M., Vavinskava, V., Lin, G.Y., Tipps, A.P., Hosseini, M.V. & Lowy, A.P. 2017.
“Low-grade appendiceal mucinous neoplasm (LAMN) and appendiceal adenocarcinoma are known to cause the majority of pseudomyxoma peritonei (PMP, i.e. mucinous ascites); however, recognition and proper classification of these neoplasms can be difficult despite established diagnostic criteria.
“Appendiceal mucinous lesions remain a difficult area for appropriate pathological classification with substantial discordance due to over-interpretation in this study. The findings highlight the critical need for recognition and application of diagnostic criteria regarding these tumours. Recently published consensus guidelines and a checklist provided herein may help facilitate improvement of diagnostic concordance and thereby reduce over-interpretation and potential overtreatment. Further studies are needed to determine the extent of this phenomenon and its potential clinical impact.”

Risk Factors of appendix cancer

As research continues, more is being learned about the causes of appendix cancer, and scientists have already identified several possible risk factors. While risk factors do not directly cause cancer, it is important to be aware of them and discuss them with a physician. Some risk factors for appendix cancer include:

- Smoking
- A family history of appendix cancer or multiple endocrine neoplasia type 1 (MEN1) syndrome
- Certain conditions that affect the stomach's ability to produce acid, such as pernicious anaemia, atrophic gastritis and Zollinger-Ellison syndrome

Staging of Appendix Cancer

If someone is diagnosed with appendix cancer, the doctor will determine the stage of the disease by judging its size and how far it has progressed. According to the National Cancer Institute, appendix cancer stages may also be described as:

- Localized: Cancer is found in the appendix, colon, rectum, small intestine and/or stomach only.
- Regional: Cancer has spread from the appendix, colon, rectum, stomach and/or small intestine to nearby tissues or lymph nodes.
- Metastatic: Cancer has spread to other parts of the body.

Carcinoid tumours and carcinomas are staged differently. Treatment for gastrointestinal carcinoid tumours is not based on the stage of the cancer, but instead on whether the tumour may be removed by surgery and if the tumour has spread.

Umetsu, S.E., Shafizadeh, N. & Kakar, S. 2017.

"The grading and staging of appendiceal mucinous neoplasms is challenging and fraught with terminology problems, but has critical prognostic and therapeutic implications. We utilized a small case series to examine the grading and staging systems of appendiceal mucinous neoplasms and outline the evidence for the new systems proposed in the upcoming 8th edition of the American Joint Committee on Cancer (AJCC) Staging Manual. We reviewed 33 cases of appendiceal mucinous neoplasms with available clinical follow-up data, 6 of which were widely disseminated in the peritoneum. An additional 4 cases with disseminated peritoneal involvement were also reviewed. A detailed review of the literature was performed with an emphasis on features associated with disease recurrence and correlation of grade with outcome. Recurrence was not seen in 64 low-grade appendiceal mucinous neoplasms (LAMNs) confined to the muscularis propria in our series (n=21) or in the literature (n=43). Of cases of LAMN with neoplastic epithelium present beyond the muscularis propria, 64% (57/89) had peritoneal disease at the time of diagnosis or follow-up. A majority of studies of disseminated appendiceal mucinous neoplasms showed significant five-year survival differences using a three-tier grading scheme. Thus, LAMNs confined to the muscularis propria are best considered as in situ tumors, as these are cured with complete excision. A three-tier system has prognostic significance and should be used for grading of disseminated appendiceal mucinous neoplasms. The conclusions of this case series and literature review provide evidence to support the changes proposed in the 8th edition of the AJCC Staging Manual."

Treatment for Appendix Cancer

Treatment for Appendix Cancer may include on or more of the following:

Surgery

Surgery is the most common first step in treating localised cancer of the appendix. Depending on the stage of the disease, the surgeon may perform one of the following operations.

> Appendectomy - if the tumour is not growing into other organs, an appendectomy — removal of the appendix — may be sufficient to remove the cancer.
>
> Hemicolectomy - if the cancer is a carcinoid tumour and it is larger than 2 cm, the surgeon may offer a hemicolectomy in addition to the appendectomy.
>
> Cytoreductive, or debulking, surgery - if the appendix cancer is not a carcinoid and is found to be at a later stage (which means it has spread), the surgeon may recommend cytoreductive, or debulking, surgery. During this procedure, the surgeon removes the tumour, and surrounding fluid if present, as well as any organs that are inseparable from the tumour, such as parts of the intestine, gallbladder, spleen, ovaries, uterus, and lining of the abdominal cavity.

Parikh, P.O., Oerez, E.A., Neville, H.L., Hogan, A.R. & Sola, J.E. 2018.

"There remains a paucity of literature on survival related to pediatric appendiceal tumors. The purpose of this study was to determine the incidence, surgical management, and survival outcomes of appendiceal tumors in pediatric patients. Overall, 209 patients had an appendiceal tumor, including carcinoid (72%), appendiceal adenocarcinoma (16%), and lymphoma (12%). Patients undergoing appendectomy vs. extensive resection had similar 15-year survival rates (98% vs. 97%; p=0.875). Appendectomy vs. extensive resection conferred no 15-year survival advantage when patients were stratified by tumor type, including adenocarcinoma (87% vs. 89%; p=0.791), carcinoid (100% vs. 100%; p=0.863), and lymphoma (94% vs. 100%; p=0.639). There was no significant difference in 15-year survival between tumor size groups ≥2 and <2cm (both 100%) and presence or absence of lymph node sampling (96% and 97%; p=0.833) for all patients with a carcinoid tumor.

"Appendectomy may be adequate for pediatric appendiceal tumors. Extensive resection may be of limited utility for optimizing patient survival, placing patient at greater operative risk."

Akoya, F., Aydin, F., Nur Eray, Y., Toksov, N., Yalcin, S., Altinav, S. & Tetikkurt, U.S. 2018.

"The tendency of non-operative management of appendicitis let us explore the natural history of appendiceal carcinoids, compare them with appendicitis patients, and determine the possibility of deciding the extent of the surgery and post-operative follow-up on behalf of the intraoperative findings. A retrospective review was performed of patients with appendicitis between 2009 and 2017. Of 2781 patients, 10 (0.36%) were diagnosed with appendiceal carcinoids. Sixty percent were female with an average age of 13.10 ± 1.73. The mean tumor size was 0.97 ± 0.34 cm with 70% located at the tip. Majority had an insular pattern (n = 9), six had subserosal fat tissue invasion, one had extension to mesoappendix, one had vascular invasion, and two had lymphatic invasion. The average mitotic index was 3.20 ± 1.40/50HPF, and Ki 67 activity was 3 ± 1.7%. The mean follow-up period was 66.40 ± 25.92 months. Patients were further evaluated with ultrasonography (n = 10), CT (n = 3), and MRI (n = 10). Serum markers including chromogranin (n = 9), NSE (n = 6), and 5-HIAA (n = 6) were normal. None required further treatment and had any symptoms of carcinoid syndromes or recurrences post-operatively.

"Other than appendectomy, no additional surgery or follow-up is required in appendiceal carcinoids less than 1.5 cm in size, regardless of the lymphoid or vascular invasion. What is Known: • The treatment of patients with a 1-2-cm tumor is not clear in both the pediatric and adult populations, and additional resection is needed. • Patients are monitored post-operatively with radiological and/or biochemical testing. What is New: • Appendectomy is curative for tumors less than 2 cm. • No additional surgery or follow-up is required in appendiceal carcinoids less than 1.5 cm in size regardless of the lymphoid or vascular invasion."

Galanopoulos, M. & Toumpanakis, D. 2018.
"Appendiceal neuroendocrine neoplasms are uncommon, mostly discovered coincidentally during appendectomy. They usually show a benign clinical course and appendectomy alone is curative. However, some cases may harbor malignant potential; therefore, additional/prophylactic operations, such as right hemicolectomy, are offered. Current international guidelines are based on heterogeneous and retrospective series. Thus, there is lack of robust evidence, mainly in terms of accurate factors, that could identify patients at risk, requiring more extensive surgical treatment. In this article, we highlight controversies in the epidemiology, workup assessment, and management algorithms of appendiceal neuroendocrine neoplasms, but also to explore future developments and advances."

Chemotherapy

Chemotherapy uses a drug or combination of drugs to target and kill cancer cells in the body. If the cancer has spread beyond the appendix, the doctor may recommend treatment with chemotherapy, which is given in one of three ways:

- *Systemic chemotherapy* is given intravenously (using an IV) or orally (by mouth).
- *Regional chemotherapy,* or intraperitoneal chemotherapy (IPC) in the case of appendix cancer, is a one-time treatment that is administered directly to the abdomen during or shortly after debulking surgery.
- *A combination* of these two types can also be used.

Chemotherapy is a common treatment for patients with appendix cancer. Chemotherapy is most often used in combination with surgery to improve disease control in cases of appendix cancer. Prior to receiving chemotherapy for appendix cancer, the patient may receive pre-medications to help make symptoms' side effects more tolerable.

Topkan, E., Polat, Y. & Karaoglu, A. 2008.
"A rare case of primary appendiceal mucinous adenocarcinoma is reported. The presenting signs and symptoms were suggestive of acute appendicitis. An appendectomy was performed resulting in a histological diagnosis of grade 2 mucinous adenocarcinoma of the appendix. The patient was referred to our clinic where he underwent a complementary right hemicolectomy with lymph node dissection. Two of the 17 resected lymph nodes were tumor positive but there was no residual tumor in the hemicolectomy specimen. The patient was staged as T4N1M0 and adjuvant multimodality treatment was planned because he was considered at high risk for local-regional recurrence and distant metastasis. Three cycles of capecitabine 1250 mg/m2 on days 1-14 and oxaliplatin 130 mg/m2 on day 1, every 21 days (CAPOX) were administered, then a total dose of 50.4 Gy external-beam radiation therapy was delivered to the primary tumor region and 45 Gy to the lymphatics, and finally 3 further cycles of the CAPOX regimen were administered. Multimodality treatment was well tolerated by the patient, who is still alive 25 months after the hemicolectomy procedure with no evidence of disease progression."

Radiation therapy

Many types of cancer are treated with radiation therapy, though this is rarely done with appendix cancer. The medical team may recommend it if the cancer has spread to other organs.

Kelly, K.J. 2015.
"Primary cancers of the appendix are rare and are frequently diagnosed after surgery for appendicitis, presumed ovarian primary malignancy, or other indications. Primary appendix cancers are histologically

diverse, and classification of these tumors has historically been confusing because of the nonstandardized nomenclature that is used. This review aimed to describe the epidemiology, presentation, workup, staging, and management of primary appendix cancers using current, recommended nomenclature. For this purpose, tumors were broadly classified as colonic-type or mucinous adenocarcinoma, goblet cell adenocarcinoma, or neuroendocrine carcinoma. Signet ring cell carcinoma was not regarded as an individual entity. The presence of signet ring cells is a histologic feature that may or may not be present in colonic-type or mucinous adenocarcinoma. The management of primary appendix cancer is complex and is dependent on the histologic subtype and extent of disease. Randomized, prospective trials do not exist for these rare tumors and management is largely guided by retrospective data expert consensus guidelines."

About Clinical Trials

Clinical trials are research studies that involve people. They are conducted under controlled conditions. Only about 10% of all drugs started in human clinical trials become an approved drug.

Clinical trials include:

- Trials to test effectiveness of new treatments
- Trials to test new ways of using current treatments
- Tests new interventions that may lower the risk of developing certain types of cancers
- Tests to find new ways of screening for cancer

The South African National Clinical Trials Register provides the public with updated information on clinical trials on human participants being conducted in South Africa. The Register provides information on the purpose of the clinical trial; who can participate, where the trial is located, and contact details.

For additional information, please visit: www.sanctr.gov.za/

Kelly,K.J. 2015.

Primary cancers of the appendix are rare and are frequently diagnosed after surgery for appendicitis, presumed ovarian primary malignancy, or other indications. Primary appendix cancers are histologically diverse, and classification of these tumours has historically been confusing because of the non-standardised nomenclature that is used. This review aimed to describe the epidemiology, presentation, workup, staging, and management of primary appendix cancers using current, recommended nomenclature. For this purpose, tumours were broadly classified as colonic-type or mucinous adenocarcinoma, goblet cell adenocarcinoma, or neuroendocrine carcinoma. Signet ring cell carcinoma was not regarded as an individual entity. The presence of signet ring cells is a histologic feature that may or may not be present in colonic-type or mucinous adenocarcinoma. The management of primary appendix cancer is complex and is dependent on the histologic subtype and extent of disease. Randomised, prospective trials do not exist for these rare tumours and management is largely guided by retrospective data expert consensus guidelines, which are summarized here.

Medical Disclaimer

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Appendix
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Moffit Cancer Center
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https://www.mskcc.org/cancer-care/types/appendiceal/treatment

National Organization for Rare Disorders
https://rarediseases.org/rare-diseases/appendiceal-cancer-tumors/

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