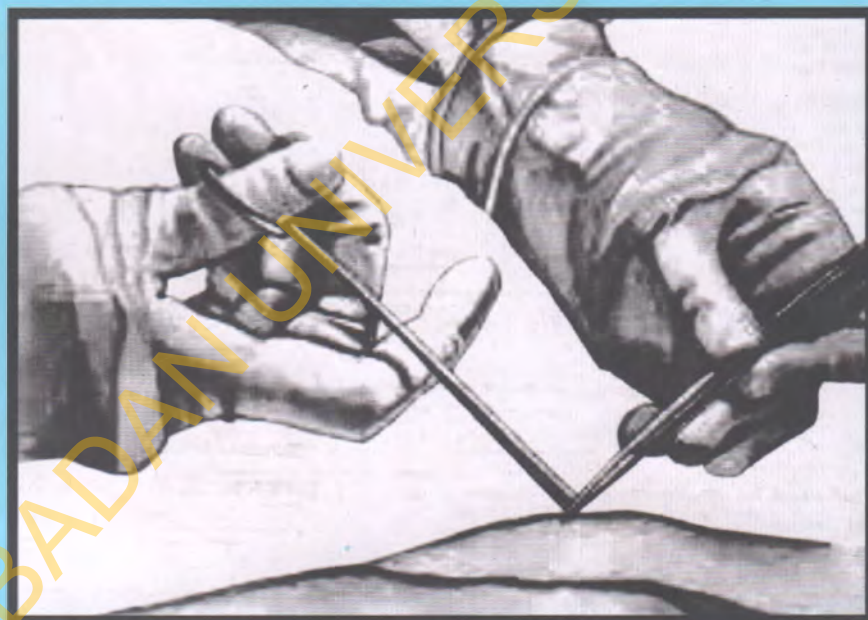




World Health
Organization



Manual of Emergency and Essential Surgical Care in Sub-Saharan Africa



Editors

E. Oluwabunmi Olapade-Olaopa

J. Kayode Ladipo

Adesina Oladokun

Simbo D. Amanor-Boadu

MANUAL OF EMERGENCY AND ESSENTIAL SURGICAL CARE IN SUB-SAHARAN AFRICA

ISBN: 978-929023390-9

© World Health Organization 2017

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

Suggested citation. Manual of Emergency and Essential Surgical Care in Sub-Saharan Africa. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

Sales, rights and licensing. To purchase WHO publications, see <http://apps.who.int/bookorders>. To submit requests for commercial use and queries on rights and licensing, see <http://www.who.int/about/licensing>.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

General disclaimers. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

Editing, typesetting and layout by:
Crafted and Bound Wordworks
1436A UI-Secretariat Road, Customs
Opposite former NITEL Office
Ibadan, Oyo State, Nigeria
Mobile: 08053381432; 08098290700
email: craftedandbound@gmail.com

Printed by Oluben Printers, Oke-Ado, Ibadan, Nigeria

Contents

Dedication	iii
Foreword	ix
Preface	xi
Acknowledgements	xiii
Contributors	xiv

VOLUME I: ESSENTIAL TRAUMA AND ANAESTHETIC CARE

Section 1: Trauma

1. Physiology of Trauma	1
<i>Mwapatza Mipando, Kondwani Katundu, Temitope Adedeji, E. Oluwabunmi Olapade-Olaopa</i>	
2. Metabolic Response to Trauma	10
<i>Oluwafunmilayo Soneye and E. Oluwabunmi Olapade-Olaopa</i>	
3. Triage in Sub-Saharan Africa	20
<i>Temitope O. Alonge, Henry A. Obamuyide</i>	
4. Initial Management of Trauma Patients in Sub-Saharan Africa	25
<i>Temitope O. Alonge, Henry A. Obamuyide</i>	
5. Principles of Wound Debridement and Extremity Splinting	36
<i>R. Olutayo Ayorinde</i>	
6. Emergency Management of Maxillofacial Trauma	41
<i>Adeola A. Olusanya and Abiodun O. Fasola</i>	
7. Emergency Room Management of Ocular Trauma	55
<i>Bade Ogundipe</i>	
8. Burr Hole Procedure and Compound Depressed Skull Fracture	67
<i>James A. Balogun, C. Olaolu Akinbo, M. Temitayo Shokunbi</i>	
9. Peculiarities of Paediatric Trauma	74
<i>Olakayode O. Ogundoyin</i>	
10. Forensic Aspects of Trauma and Injuries	86
<i>Uwom O. Eze</i>	
11. Management of Medical Emergencies	98
<i>Arinola Ipadeola and Babatunde L. Salako</i>	

12. Nursing the Trauma Victim	106
<i>Funmilayo A. Okanlawon, Oyeninahun Abimbola Oluwatosin, Prisca O. Adejumo, Beatrice M. Ohaeri, Chizoma M. Ndikom</i>	
13. Feeding the Trauma Victim	113
<i>Rasaki A. Sanusi and Morenike O. Ogunkunle</i>	
14. Physiotherapy for the Trauma Victim	122
<i>Aderonke O. Akinpelu and Babatunde O.A. Adegoke</i>	
15. Essential Radiology for Trauma in a Primary Health Care Setting	137
<i>Omolola M. Atalabi</i>	
16. Training Trauma Care Providers in Sub-Saharan Africa	150
<i>Oludolapo O. Afuwape</i>	
Section 2: Other Aspects of Trauma Care	
17. Epidemiology of Trauma in Africa	161
<i>IkeOluwapo O. Ajayi and E. Afolabi Bamigboye</i>	
18. Ethics in Trauma Care	173
<i>Temitayo O. Ogundiran, Adefolarin O. Malomo, Emmanuel R. Ezeome</i>	
19. Legal Aspects of Caring for the Trauma Victim	185
<i>Folake Tafita</i>	
20. Health Economics in Trauma Care	199
<i>Adedoyin Soyibo</i>	
21. Sociological Model for Trauma Care	211
<i>Ayodele S. Jegede and Olufunke O. Adegoke</i>	
22. Health Policy on Trauma Care in Africa	225
<i>Taiwo A. Obembe and Kayode O. Osungbade</i>	
23. Role of Telemedicine in Trauma Care in Africa	239
<i>E. Oluwabunmi Olapade-Olaopa and Omobola O. Johnson</i>	
Section 3: Anaesthetic Care	
24. Cardiopulmonary Resuscitation	247
<i>Oluranti A. Akinyemi</i>	
25. Endotracheal Intubation	256
<i>Oluranti A. Akinyemi</i>	
26. Care of the Unconscious Patient	267
<i>Arinola A. Sanusi</i>	
27. Pain Management in the Surgical Patient	272
<i>Olayinka R. Eyelade, Simbo D. Amanor-Boadu</i>	
28. Basic Regional Anaesthetic Block	281
<i>Ambrose Rukewe</i>	

VOLUME II: COMMON SURGICAL AND OBSTETRIC EMERGENCIES

Section 4: Common Surgical Emergencies

29. Fluids and Electrolytes in Surgical Emergencies	295
<i>Mudasiru A. Salami and E. Oluwabunmi Olapade-Olaopa</i>	
30. Suturing Techniques	308
<i>Olubayo Fasola and Olukayode Iyun</i>	
31. Venous Cutdown (Prototype - Saphenous Vein)	315
<i>Omobolaji O Ayandipo and Temidayo O Ogundiran</i>	
32. Diagnostic Peritoneal Lavage	321
<i>Josephus K. Ladipo and Alaba M. Adesina</i>	
33. Initial Management of Burn Injury	327
<i>Odunayo M. Oluwatosin</i>	
34. Tracheostomy and Cricothyroidotomy	334
<i>Ayotunde J. Fasunla and Onyekwere G.B. Nwaorgu</i>	
35. Closed Tube Thoracostomy Drainage	342
<i>Peter O. Adeoye</i>	
36. Emergency Exodontia	348
<i>Abiodun O. Fasola</i>	
37. Syringing and Other Emergency Procedures in Ear, Nose and Throat Surgery	358
<i>Aderemi A. Adeosun</i>	
38. Urethral Catheterization	367
<i>Augustine O. Takure and Linus I. Okeke</i>	
39. Suprapubic Cystostomy	372
<i>S. Adekola Adebayo, Olushola J. Ajamu, Olayiwola B. Shittu</i>	
40. Male Circumcision	384
<i>Ademola A. Popoola</i>	
41. Testicular Torsion	401
<i>Akinlabi Ajao, Nnaemeka Nwafulume, E. Oluwabunmi Olapade-Olaopa</i>	
42. Management of Pressure Ulcers	408
<i>Samuel Adesina Ademola</i>	

Section 5: Common Obstetric and Gynaecological Emergencies

43. Coital Laceration	425
<i>Folasade A. Bello</i>	
44. Marsupialization	430
<i>Olutosin A. Awolude</i>	

Contents

45. Abortion: Manual Vacuum Aspiration	439
<i>Olayinka O. Ogunbode</i>	
46. Episiotomy	450
<i>Gerald C. Nkwocha</i>	
47. Vaginal Breech Delivery	457
<i>Christopher O. Aimakhu and Adesina Oladokun</i>	
48. Operative Vaginal Delivery	465
<i>Christopher O. Aimakhu</i>	
49. Caesarean Section	475
<i>Christopher O. Aimakhu and Adesina Oladokun</i>	
50. Postpartum Haemorrhage	485
<i>Imran O. Morhason-Bello and Adesina Oladokun</i>	
Section 6: Other Essential Surgical Skills for Africa	
51. Preparing for Safe Surgery in a Resource-limited Environment	503
<i>Olukayode Iyun and Olayinka A. Olawoye</i>	
52. Operating on Patients with Highly Infectious Diseases	514
<i>Afieharo I. Michael and Olukemi A. Adekanmbi</i>	
Index	521

Marsupialization

Olutosin A. Awolude

Introduction

The Bartholin's glands are two pea-sized, impalpable glands located posterior and to the left and right of the opening of the vagina. The opening of each gland is about 1cm from the fourchette and they (the glands) secrete mucus to lubricate the vagina at sexual arousal. A Bartholin's cyst occurs when the opening of a Bartholin's gland is blocked causing a fluid-filled cyst to develop which results in a painless swelling of the labia majora. The cyst becomes an abscess if infection sets in, in which case the swelling becomes painful and might discharge purulent effluent. Marsupialization is a method of treatment for Bartholin's cysts and abscesses which aims at restoration of glandular function and prevention of recurrence. It is a surgical procedure in which a new mucocutaneous junction is constructed by suturing the cyst lining to the skin.

The purpose of marsupialization of the Bartholin's gland is to exteriorize the cavity of the cyst or abscess in such a fashion that it will become epithelialized from the base.

Indications for Marsupialization

- Bartholin's cyst
- Bartholin's abscess

Materials for Marsupialization

- Sterile gloves
- Povidone iodine solution
- Lidocaine (xylocaine) 1% or 2% solution
- 5-ml syringe with 25-gauge, 1-inch needle
- No. 11 scalpel blade
- Two small No. 1 artery forceps

- Gauze (sterile)
- Pickups/tissue forceps
- Sponges holding forceps
- Scissors (Mayo, Metzenbaum)
- Allis clamps
- Absorbable suture: 2-0 or 3-0 polyglactin or chromic suture
- Culture swab and tube

Anaesthesia for Marsupialization

The typical anaesthesia used for a Bartholin gland marsupialization is procedural sedation, a local anaesthetic alone, regional anaesthesia or a combination of procedural sedation and local anaesthetic.

A local anaesthetic like lidocaine should be administered and may minimize postoperative discomfort. Including a vaso-constrictive agent, such as epinephrine, with the local anaesthetic may be beneficial. Although bleeding is usually minimal for the procedure, this step may help during those few times when bleeding may otherwise cloud the surgical field.

The anaesthesiologist usually chooses the anaesthetic technique/agents. Depending on body habitus, airway distortion, or prior history of adverse reactions to anaesthesia, the anaesthesiologist may decide that general anaesthesia, which requires intubation, may be the best method, and procedural sedation may be forgone. Given that most marsupializations are relatively quick procedures, this happens rarely.

Operative Technique

Positioning

After the administration of the anaesthetic, the patient is carefully placed in lithotomy position to prevent unwanted injury to pelvic, buttock, or groin vasculature or nerves. Sterile preparation is done. Sterile drapes are applied while allowing the surgeon adequate exposure to the operation site. A sterile towel is placed over the anal area to guard against anal and rectal bacteria. Once properly prepped and draped, the bladder is drained with a straight metal catheter or alternatively, a Foley catheter.

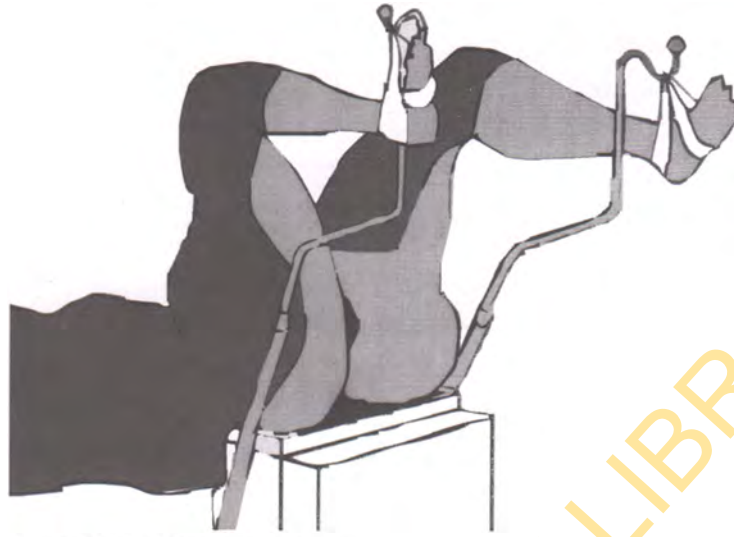
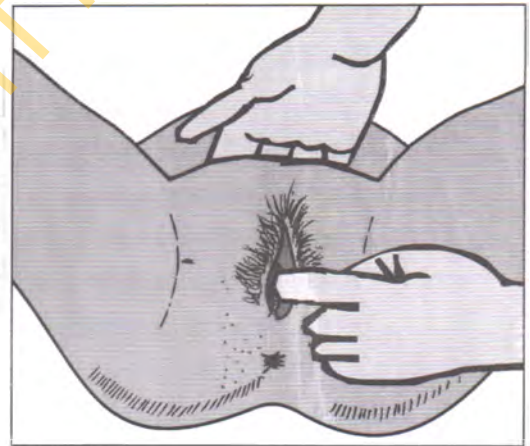


Figure 44.1 Lithotomy position.

- a. Perform a thorough bimanual examination to determine the extent of the cyst or abscess. This helps the surgeon determine the borders and extent of the cyst or abscess.



P432

Figure 44.2

- b. Retract the labia with interrupted 3-0 sutures to expose the introitus of the vagina

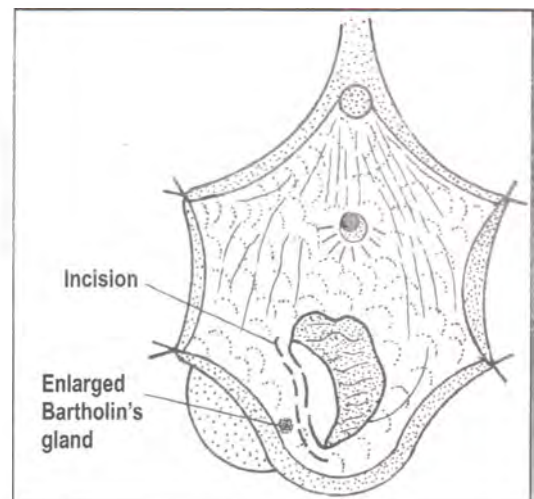


Figure 44.3

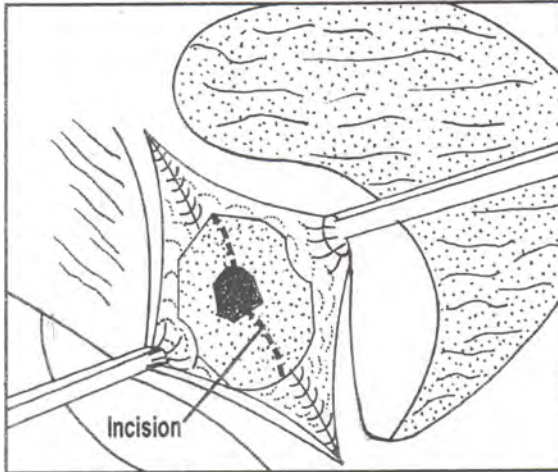


Figure 44.4

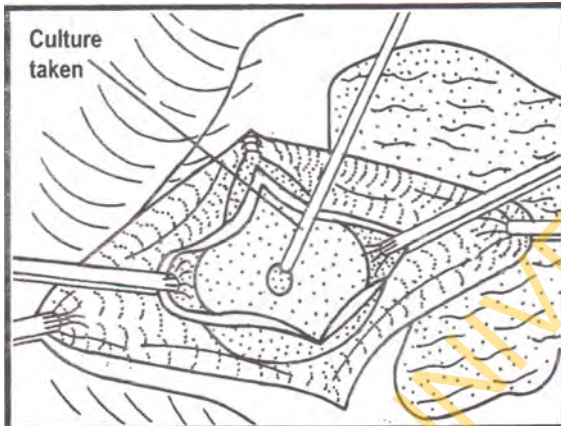


Figure 44.5

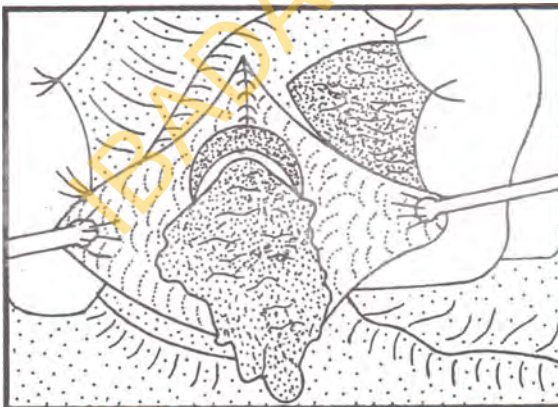


Figure 44.6

- c. Grasp the cyst wall with two small haemostats and make a vertical 1.5 to 3 cm incision (depending on the size of the cyst or abscess) in the vestibule over the centre of the cyst and outside the hymenal ring. Care must be taken to ensure that the opening into the gland is sufficient to promote adequate drainage. Any bleeding noted can be controlled with sponges or suction. The cyst wall is then everted and approximated to the edge of the vestibular mucosa with interrupted 2-0 absorbable suture.

- d. A sample of the content is taken for culture.

- e. The contents of the cyst or abscess are evacuated. The cavity also may be irrigated with saline solution and, if necessary, loculations can be broken up with a haemostat.

- f. The cyst wall is then everted and approximated to the edge of the vestibular mucosa with interrupted 2-0 absorbable suture.

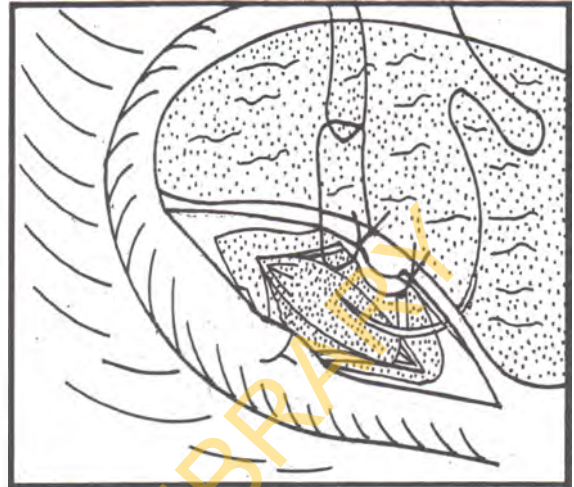


Figure 44.7

Post-operative Management

The patient starts sitz baths on the first or second postoperative day. Oral pain medication such as ibuprofen, acetaminophen, or an appropriate narcotic, is administered if pain is severe. A laxative and stool softener may be given on the third postoperative day. Broad-spectrum antibiotics can also be administered until final culture results are obtained. Sexual intercourse can usually be resumed in 4 weeks.

Complications of Marsupialization

- Recurrence. The rate can range from 2-25%.
- Haematoma
- Postoperative infection
- Dyspareunia
- Scarring of the Bartholin gland

ALTERNATIVES TO MARSUPIALIZATION

Use of Word Catheter

A Word catheter is a rubber catheter about 2.5cm long with a diameter of no. 10 French Foley catheter. The tip has an inflatable balloon that can hold about 3ml of fluid to keep the catheter in place for 2-6 weeks. It is an effective alternative to marsupialization to treat Bartholin's duct cysts and gland abscesses.

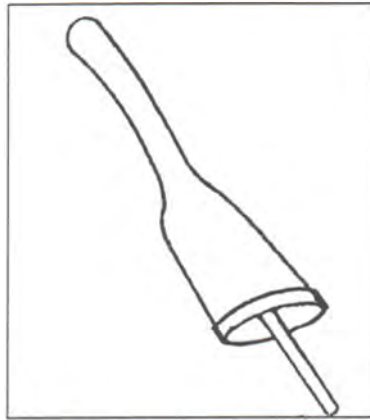


Figure 44.8 Word catheter.

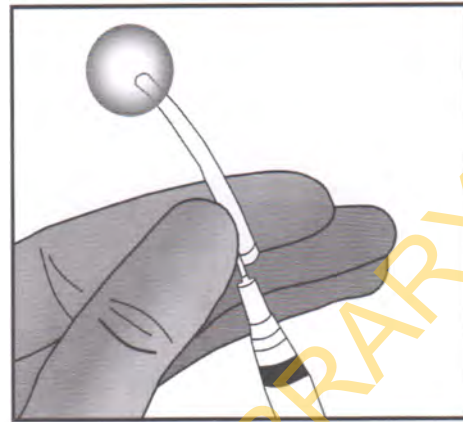


Figure 44.9 Word catheter with inflated balloon.

Materials for Placement of Word Catheter

- Sterile gloves
- Iodine solution
- Lidocaine (xylocaine), 1% or 2% solution
- 5-ml syringe for injecting lidocaine
- Word catheter
- Saline solution
- 3-ml syringe for inflating balloon with saline solution
- Small forceps for grasping cyst wall
- No. 11 scalpel
- Gauze pads, 4 3 4 inch
- Haemostats to break up loculations

Procedure for Insertion of Word Catheter

Positioning

The patient should be placed in lithotomy position.

Technique for Word catheter insertion

- a. The labia parted to expose the lesion. The labia and the surrounding skin is prepared using sterile solution .

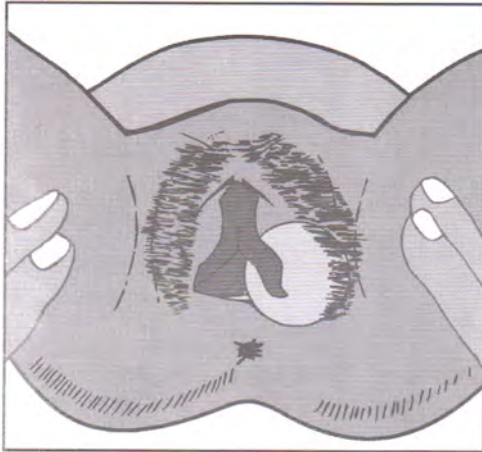


Figure 44.10a The labia are parted to expose lesion.



Figure 44.10b Skin preparation with povidone iodine.

- b. Infiltrate the labia minora subcutaneously with about 3ml of 1% lidocaine. An area of fluctuation is identified in the vestibule where a 0.5-1cm long incision is made using No. 11 scalpel blade. The incision should be just larger than the catheter diameter.

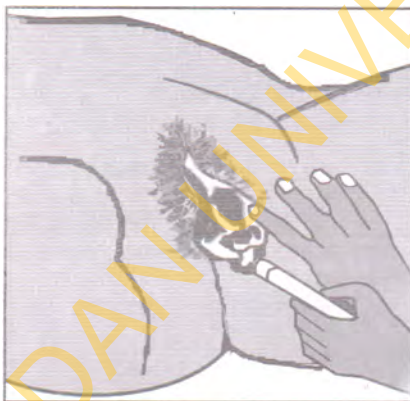


Figure 44.10c Local infiltration with 1% lidocaine.

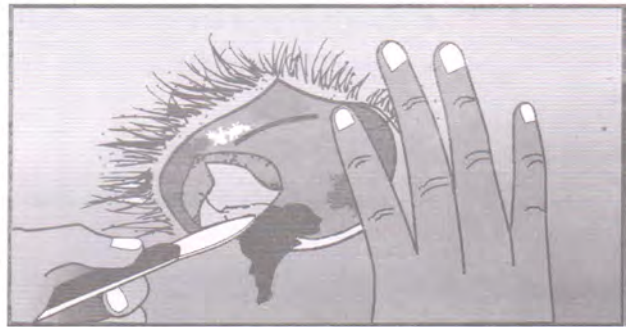


Figure 44.10d Incising the cyst wall with a scalpel blade.

- c. The content of the sac is then expressed using a suction system or manually, and a sample is sent for culture. The tip of the Word catheter is inserted into the abscess cavity.

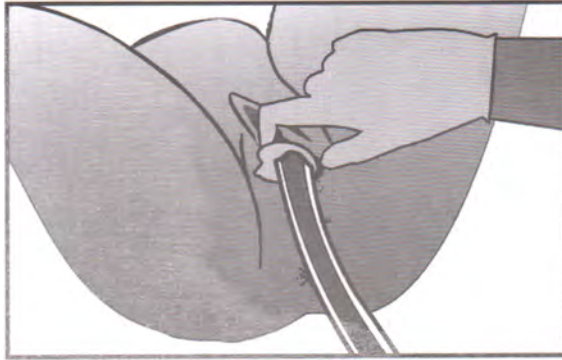


Figure 44.10e Evacuating the cyst content.

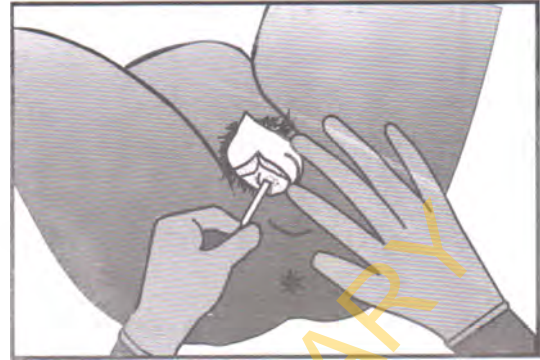


Figure 44.10f Inserting the Word catheter

- d. The balloon of the catheter is inflated with about 3ml of normal saline or sterile water and the free end of the catheter is then tucked into the vagina.

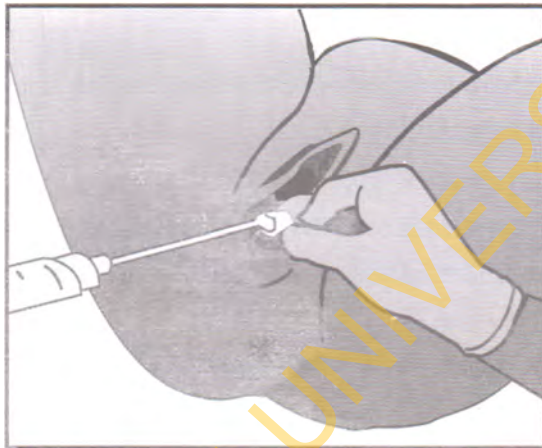


Figure 44.10g Inflating the balloon.

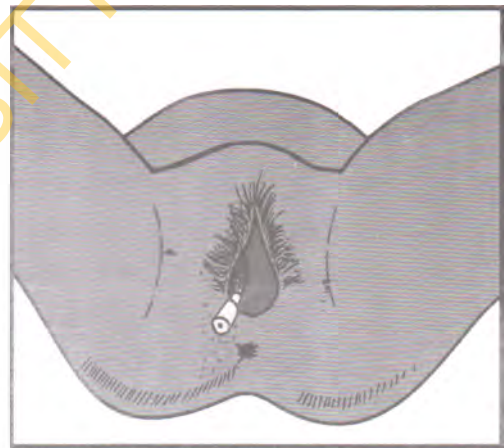


Figure 44.10h The free end is tucked into the vagina

Post-procedure, the patient should abstain from vaginal intercourse while the catheter is in place. The catheter creates a small fistula with a small ostium which is scarcely noticeable after complete healing.

To allow epithelialization of the surgically created tract, the Word catheter is left in place for four to six weeks. Sitz baths taken two to three times daily may aid patient comfort and healing during the immediate postoperative period. Postoperative antibiotic is needed especially when there is cellulitis. Coitus may be resumed immediately after catheter removal.

Contraindication to Insertion of Word Catheter

Deep Bartholin's cyst or abscess.

Complications of Word Catheter Insertion

- Recurrence
- Missed diagnosis of Bartholin duct carcinoma
- Bleeding
- Progressive infection and sepsis

EXCISION OF BARTHOLIN'S GLAND

Indications for Removal of Bartholin's Gland

- Patients who do not respond to conservative procedures of marsupialization or insertion of Word catheter.
- When multiple attempts have been made to drain a cyst or an abscess with presence of adhesions and scarring.
- When it is necessary to exclude adenocarcinoma of the Bartholin's gland especially in elderly patients (more than 40 years of age).

Note:

Simple incision and drainage should be discouraged. It is associated with high rate of recurrence. It usually makes subsequent attempt at insertion of Word catheter or marsupialization difficult.

Therefore, ALL patients requiring excision of Bartholin's gland should be referred to a specialist.

Further Reading

Omole F, Barbara J. Simmons BJ, Hacker Y. Management of Bartholin's duct cyst and gland abscess. *Am Fam Physician* 2003; 68(1): 135-140.

Shlamovitz GZ. Bartholin Abscess Drainage. *Drugs, Diseases and Procedures, Medscape Reference*. Updated, Feb 27, 2012.

Wheless CR and Roenneburg ML, eds. *Atlas of Pelvic Surgery*. Online Edition.