obstetric trauma surgery
art and science

ba hanya and total cervix/uterus prolapse
innovative workshop

kees waaldijk
sponsored and financed by

FISTULA FOUNDATION

pages: 56
color pages: 27

drawings by the author
technical assistance by mark

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babbar ruga national fistula hospital
katsina
nigeria
obstetric trauma surgery
art and science

setting standards by evidence-based practice

ba hanya and total cervix/uterus prolapse
innovative 5-day workshop
as pilot

hajiya gambo sawaba general hospital
zaria
monday 17 thru friday 21 july 2017

outline    set up    objectives
results    science

kees waaldijk md phd
obstetric trauma surgery
art and science

series of textbooks each with a specific topic

setting evidence-based standards

this series has been developed for setting evidence-based standards in the training and management of the obstetric trauma in all its forms in the developing as well as in the industrialized world

the name of the series has been changed from obstetric fistula to obstetric trauma surgery since the fistula is only one aspect of the complex obstetric trauma

though a systematic approach is being followed this seems to be a utopia since the material is too extensive and it would take too long

each time a specific topic has been finalized it will be published as a separate entity; with later on an update if needed

then somewhere along the line a comprehensive summary will be produced in order to have a representative overview

the emphasis is placed on the functional anatomy of pelvis, pelvis floor and pelvis organ(s), the female urine and stool continence mechanisms, the mechanism of action and the principles of reconstructive and septic surgery

for training reasons it will follow a step-by-step approach and repetition; together with schematic drawings and photographs

the whole series is based on kees archives of obstetric trauma with so far 25,000 reconstructive and conservative procedures in 20,000 patients with a rare “complete” documentation of each procedure and results as to healing and continence by electronic reports with 150 parameters, over 100,000 pre/intra/postoperative digital photographs and a comprehensive database as personal experience over a 30-year period from 1984 up till now

as such it is considered to be a full scientific evidence-based report; though it has not followed the “you peer me, i peer you” doctrine

it is also not following the strict protocol of the international scientific journals or the so-called established theories; since only dead fish follow the flow of the river; and strict protocols kill any creativity; the message is not in the format

since it is the life work of the author it is written in his own words and in his own style

writing things down helps the author in organizing his own understanding and ideas
ba hanya (= gynatresia) due to obstetric trauma is common and poses a major problem to the woman and the obstetric trauma surgeon recently, the author developed a safe reconstruction of a Kees neovagina which gives good cosmetic and functional results, without major intraoperative complications and without a single postoperative complication in the 45 reconstructions so far performed and is totally in line with the functional pelvis anatomy which can be performed per “vaginam” in all our centers, under spinal anesthesia only, no need for special expensive instruments, no need for blood transfusion, no need for special intensive care unit; and so under the same conditions under which the obstetric trauma surgery is executed since operation time ranged from 45-100 min; on the average some 60 min; and blood loss ranged from 50-100 ml, so ≥ 100 ml

so though awaiting long-term results, we can say the problem of ba hanya solved

total cervix/uterus prolapse c3 + c4 constitutes a major health problem, probably as big as the obstetric fistula over the years, the author developed a safe technic of Kees anatomic cervix fixation which gives good anatomic and physiologic results since no hysterectomy is performed so the young patients can conceive again and even deliver vaginally with cervix still in place and is totally in line with the functional pelvis anatomy which can be performed per vaginam in all our centers, under spinal anesthesia only, no need for special expensive instruments except for sharp deschamps aneurysm needle, no need for blood transfusion, no need for special intensive care unit; so under the same conditions under which the obstetric trauma surgery is executed since operation time some 5 min; however, for teaching some 15 min are needed; and blood loss 50-100 ml, so ≥ 100 ml this technic is long-term evidence based in the 348 women so far operated

so the problem of total cervix/uterus prolapse c3 + c4 solved

therefore it was decided to execute an innovative workshop in a transparent way to advocate these technics for anyone to see, to believe and to comment

this textbook is just another one out of the series obstetric trauma surgery; art and science

by publishing this officially the author claims his full intellectual property rights in a world where scientific theft and other stealing of the obstetric fistula is rampant

the author

15th august 2017
pelvis anatomy
Executive Summary

This innovative workshop was organized to demonstrate a safe and effective operation technic for ba hanya (gynatresia) and for total cervix/uterus prolapse within our obstetric trauma surgery to a larger obstetric trauma audience in a transparent way.

All patients were examined by the chief consultant and his team the day before the workshop started and a work plan established.

During the 5 days of the workshop, a total of 28 procedures were performed in 20 patients: 12x kees neovagina; 5x anatomic kees cervix fixation; 5x vvf-repair; 4x rvf-repair; 1x musculofascia repair with 1x cx re-anchoring.

Each procedure was executed in a step-by-step teaching process where every step was explained and demonstrated to the participants who all were given the opportunity to palpate certain characteristic points; but not more than 2 participants per operation.

All patients were/are doing fine immediately after the operation, mobilized fully the following day and happy thereafter.

Not a single major intraoperative or postoperative complication was encountered.

Operation time kees neovagina varied from 45 to 100 min; on the average some 60 min.

Operation time kees cervix fixation 10-15 min; normally 5 min.

Blood loss varied from 50 to 150 ml.

After closing the operation procedures, a total of 3 theoretic Powerpoint lectures were given followed by questions & answers.

The patients selected but not operated during the workshop were all successfully operated the following week; not a single one left making good on our promise.

All the 18 patients with ba hanya and 18 patients with total cervix/uterus prolapse as selected have been operated within 2 weeks together with our other obstetric trauma surgery; all with excellent results at first follow-up 4 weeks later, see op reports.

Conclusion

This innovative workshop was executed as planned and showed that all the procedures performed were safe and successful and do not need special equipment, general anesthesia, blood transfusion, antibiotics or an intensive care unit.

The problem of ba hanya and cervix/uterus prolapse solved.

However, exact knowledge of the functional pelvis anatomy combined with high surgical skills is a sine qua non.

Lastly, many thanks to fistula foundation and to fistula care plus for their financial and moral support.
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innovative workshop ba hanya and total cervix/uterus prolapse as based on the functional pelvis anatomy

the obstetric fistula is only one aspect of the enormous variety of the complex obstetric trauma and has to be addressed/treated within this context

over the years the author has developed a systematic approach to all kinds and types of obstetric fistulas with different safe evidence-based technic to reconstruct the functional pelvis anatomy with excellent results as to closure and continence

however, there are more highly complicated problems associated with the complex obstetric trauma like

ba hanya (gynatresia) preventing the patients from having vaginal sexual intercourse and as such pregnancy

recently the author developed a safe pure vagina approach to reconstruct a neo-vagina according to the functional pelvis anatomy with (re)positioning of the cervix

after which the woman can have vaginal sexual intercourse and may become pregnant

though the operation technic is rather straightforward the postoperative care is complicated since the neo-vagina has to be kept open for at least 4-5 weeks by a vagina pack to be changed every 5 days

(sub)total cervix/uterus prolapse c3 and c4 is another major problem within the complex obstetric trauma and extremely embarrassing for the woman; the incidence and prevalence is probably as high as or may be even higher than those of the obstetric fistula

over the years the author developed a safe evidence-based technic according to the functional pelvis anatomy (corpus intrapelvinum) whereby the cervix is repositioned and fixed into its “anatomic” position; with cure of concomitant stress incontinence; for two different groups of women

age group older than 60 years
only refixation of the cervix into its “anatomic” position since that is their main complaint

age group younger than 60 years
besides refixation of cervix into its “anatomic” position, also longitudinal reconstruction of the median defect within the intrapelvic urogenitodigestive diaphragm after which most patients become pregnant again and deliver again mostly vaginally with cervix still in its anatomic position; they all have been advised elective cesarean section but most of them wait till labor starts and then since they have a wide pelvis they deliver before a decision is taken or before reaching the hospital
set up

innovative workshop ba hanya and total cervix/uterus prolapse as based on the functional pelvis anatomy

venue

hajiiya gambo sawaba general hospital has been chosen since it is a small hospital with excellent discipline and excellent postoperative care with highly cooperative staff and it is situated rather centrally within our project

patients

18 patients have been selected with ba hanya and
18 patients with total cervix/uterus prolapse

quality vs quantity

though it is planned to operate all the patients we will concentrate upon quality; thus some patients may be left who will be operated afterwards with preference

participants

9 nigerian fistula surgeons have been invited
14 nurses including 3 theater nurses and 1 anesthetic nurse
10 other sub-staff and
1 other highly experienced fistula surgeon from outside nigeria

full transparency

we aim at full transparency at each stage

as sponsored by fistula foundation and fistula care plus
objectives

innovative workshop ba hanya and total cervix/uterus prolapse as based on the functional pelvis anatomy as a pilot for the future

to demonstrate that all types of obstetric trauma including the most extensive ones can be handled safely using the existing facilities/equipment of our project

under the philosophy that reconstruction of the functional anatomy will ensure not only repair of all the lesions but the normal physiology as well including urine/stool continence, sexual intercourse and reproduction

using different evidence-based operation technics as developed over 30 years by the chief consultant surgeon with excellent results

these will be demonstrated by the chief consultant surgeon Dr Kees in a step-by-step reconstruction of the functional female pelvis anatomy

with theoretic explanation before/after each operation with questions by the participants and answers by the chief consultant surgeon

for this 9 Nigerian fistula surgeons and 1 surgeon from outside have been invited, 14 nurses and 10 other staff and

18 women with ba hanya and 18 women with total cervix/uterus prolapse have been selected for the 5-day workshop as a pilot

with a workplan of operating every day 2-3 women with ba hanya and 2-3 women with total cervix/uterus prolapse

however, since we value quality more than quantity we may reduce the neovagina reconstruction to 2 a day especially since the postoperative nursing load is high due to the repeat repacking

the patients eventually not operated will be treated with preference afterwards

besides the workshop there will be a talkshop as well with theoretic lectures about the functional pelvis anatomy in the female and the rationale of the operation technics by the chief consultant surgeon

for transparency everything will be fully documented with predictions as to healing and function as included in a written workshop report

besides this a final evaluation report will be produced with evidence-based results for each and every operation

with recommendations for the future
Monday 17 July 2017

001_vvf-832/833 Kees neovagina + bladder closure bco ba hanya due to mayer-rokitanski-küster-hauser syndrome in 18-yr-old PO

002_vvf 834 Kees neovagina reconstruction in 40-yr-old PO bco mayer-rokitanski-küster-hauser syndrome; she wants her new husband to stay with her since all the others left her after some time

003_vvf 835/836 Longitudinal musculofascia repair with cervix re-anchoring of 3° cystocele ba3 with 2° cervix prolapse c2 in 17-yr-old PI (alive) something coming out for 3 mth after delivery I, live female in hospital

004_vvf 837 Anatomic Kees cervix fixation at L of total cervix prolapse c4 in 25-yr-old PII (1 alive) something coming out for 8 yr after delivery I, live male at home no major intraoperative complications

Wardround by Dr Adamu: all patients doing fine

Tuesday 18 July 2018

Wardround by Dr Adamu: all patients fine, mobilized, not a single complication

005_vvf 838/839 Anatomic Kees cervix fixation with euo-rhaphy bco cervix prolapse c3 with post IIb incontinence in 22-yr-old P0 prolapse/leaking urine for 7 yr after yankan gishiri by wanzami, operated 5x

006_vvf 840 Anatomic Kees cervix fixation at L of total 3° cervix prolapse c4 in 23-yr-old PII (all alive) prolapse for 6 yr after delivery II, live male at home; operated 1x

007_vvf 841 Kees neovagina reconstruction bco ba hanya with postrepair incontinence in 35-yr-old PI (0 alive) for 15 yr after delivery I, sb male by cs; operated 6x vvf no major intraoperative complications

Wardround by Dr Adamu: all patients doing fine

Wednesday 19 July 2017

Wardround by Dr Adamu: all patients fine, fully mobilized, not a single complication

008_vvf 842 Kees neovagina bco congenital ba hanya in 32-yr-old P0 after yankan gishiri by wanzami and

009_rvf 134 Release of rotation flap scar with sphincter ani reinforcement bco flatus incontinence; operated 3x for vvf and 3x for rvf

010_vvf 843 Kees anatomic cervix fixation bco total 3° cervix prolapse c4 without urine incontinence in 27-yr-old PIV (2 alive) something coming out for 5 yr after delivery III, live male in hospital

011_vvf 844 Kees neovagina bco ba hanya in 29-yr-old PII (0 alive) for 9 yr after delivery II, sb male by cs: still post IIb incontinence; operated at least 2x

012_vvf 845 Anatomic Kees cervix fixation of massive total 3° cervix prolapse c4 in 36-yr-old PVII (6 alive) something coming out for 14 yr after delivery IV, live female at home

013_vvf 846 Highly complicated reconstruction of Kees neovagina of totally fibrosed ba hanya and

014_vvf 847 Transverse closure of “inoperable” severely mutilated fibrosed type IIb fistula and

015_rvf 135 Transverse closure of iatrogenic type IIa stool fistula in 26-yr-old PI (0 alive) leaking urine/ba hanya for 6 yr after delivery I, sb female in hospital; operated 7x no major intraoperative complication

Wardround by Dr Adamu: all patients doing fine
thursday 20 july 2017
wardround by dr adamu: all patients fine, fully mobilized, not a single complication

016_vvf 848 highly complicated transverse urethra closure of inoperable residual type IIb fistula and

017_vvf 849 reconstruction of kees neovagina in 28-yr-old PI (0 alive) leaking/ba hanya for 14 yr after delivery I, sb female in hospital; operated at least 3x

018_vvf 850/851 highly complicated reconstruction of kees neovagina bco ba hanya + inoperable type IIb in 36-yr-old PI (0 alive) ba hanya/leaking for 20 yr after delivery I, sb male in hospital; operated many times

019_vvf 852 highly complicated reconstruction of kees neovagina bco ba hanya with post IIb incontinence in 40-yr-old PI (0 alive) for 26 yr after delivery I, sb male in hospital; operated at least 4x

020_rvf 136 transverse rectum closure of intraoperative iatrogenic rvf (inoperable ba hanya) in 39-yr-old PI (0 alive) with ba hanya/leaking for 24 yr after delivery I, sb female in hospital; operated 3x for rvf

no major intraoperative complication

wardround by dr adamu: all patients doing fine

friday 21 july 2017
wardround by dr adamu: all patients fine, fully mobilized, not a single complication

021_vvf 853 reconstruction of kees neovagina bco ba hanya + post IIb incontinence in 25-yr-old PI 0 alive) leaking/ba hanya for 10 yr after delivery I, sb male in hospital; operated at least 3x vvf and 1x rvf

022_vvf 854 reconstruction of kees neovagina bco ba hanya + post IIb incontinence in 29-yr-old PI (alive) for 15 yr after delivery I, live male by cs, operated at least 2x

023_rvf 137 longitudinal rectum closure of type IIa stool fistula + total post IIb inc + ba hanya in 33-yr-old PI (0 alive) for 17 yr after delivery I, sb male in hospital; operated 10x for vvf; if healed for neovagina later

wardround by dr adamu: all patients doing fine

theoretic lectures by power point from 15.30 to 18.00 hr

a female pelvis anatomy

b connective tissue body of pelvis = corpus intrapelvinum with intrapelvic urogenito digestive diaphragm as another concept for continence and prolapse

c mechanism of urine (in)continence in the female

closing remarks by
dr amodu abiodun representing fistula care plus,
dr husaina adamu representing kofan gayan hospital and
the chief consultant dr kees

saturday 22 july 2017
wardround dr adamu/dr kees: all patients fine, fully mobilized, not a single complication

saturday 29 july 2017
wardround dr adamu/dr kees: all patients fine, fully mobilized, not a single complication

first follow-up with full examination planned at 4-5 weeks: excellent results

second follow-up with full examination planned at 2 months
conclusion and recommendations

all the patients were highly satisfied, the participants impressed and the facilitators tired but happy that

everything went fine according to plan without any complication and with excellent preliminary results of an evidence-based no-nonsense approach

see first follow-up operation reports at 4 weeks

in order to disseminate the knowledge and expertise necessary to tackle the major obstetric trauma problems with the ultimate goal of improving the quality of life of the women the following recommendations are made

organize this kind of 5-day innovative workshops for already experienced obstetric trauma surgeons, preferably for one specific topic only like

circumferential fistula repair
continent urethra reconstruction
prevention of postrepair incontinence
surgery of postrepair incontinence
ba hanya
total cervix/uterus prolapse
sphincter ani rupture

as combination of work- and talk-shop

select hospital as venue which can handle the number of patients within short time span and which can handle the intensive postoperative care

select minimum of 20 patients

select maximum of 5 already experienced obstetric trauma surgeons

find an organization which is willing to finance this kind of workshop

contact the obstetric trauma team to facilitate the surgery and the science

document everything meticulously

make sure follow-up is guaranteed

training is a continuous life-long exercise which never stops
### Participants

#### Surgeons
- Dr. Habila Muazu (Cmd)
- Dr. Husaina Adamu (Fistula Surgeon)
- Dr. Mairo Hassan (Consultant Gynecologist)
- Dr. Sadiya Nasiru (Fistula Surgeon)
- Dr. Kabiru Abubakar (Consultant Surgeon)
- Dr. Halima Bello (Consultant Gynecologist)
- Dr. Abiodun Amodu (Consultant Surgeon)
- Dr. Thomas Raassen (Consultant Surgeon)

#### Nurses
- Alh. Aminu Abdullahi
- Alh. Ibrahim Aliyu
- Mrs. Fatima A. Umar
- Mrs. Maimuna I. Muye
- Mrs. Ester J. Mutum
- Mrs. Safiya I. Magaji
- Mrs. Deborah Akubu
- Mrs. Asmau A. Aliyu
- Alh. Kabiru I. Yahaya
- Alh. Sani Ismaila
- Hajiya Bilkisu Mammandi
- Hajiya Hafsat Ibrahim
- Alh. Abdullahi Haruna
- Alh. Kabir Lawal

#### Staff/Attendants
- Hajiya Maimuna Rabiu
- Hajiya Salamatu Abdullahi
- Hajiya Salaha Haruna
- Hajiya Halima Abdullahi
- Alh. Umar Dalhatu
- Alh. Sabitu Lawal
- Alh. Suleiman M. Dikko
- Alh. Abubakar Sani
- Alh. Yahaya Shehu
- Alh. Salisu Aliyu

#### Facilitators
- Dr. Husaina Adama (Pre-/Postoperative Care)
- Alh. Ibrahim Aliyu (Anesthesia)
- Alh. Aminu Abdullahi (Pre-/Postoperative Care)
- Alh. Abdullahi Haruna (Logistics)
- Alh. Kabir Lawal (Theater Nurse)
- Hajiya Fatima Umar (Pre-/Postoperative Care)

#### Chief Trainer/Consultant Surgeon
- Kees Waaldijk MD PhD (Chief Consultant Surgeon)
pt 707 zaria workshop vvf 832
pt 708 ba hanya; neovagina reconstruction vvf 833

hmd (kano city) female 18 yr 17.07.17

surgeon: kees waaldijk
assistant: kabir lawal

diagnosis: P0 (alive), ba hanya ko kadan due to mayer-rokitanski-küster-hauser syndrome, married 5 yr ago pre(menarche), not living with husband, no menstruation, no yankan gishiri; normal ap diameter/wide pubic arch 90°, ar pos laparotomy 1x
ba hanya ko kadan i/v 2 cm

operation: kees neovagina reconstruction + bladder closure
duration: 75 min (step-by-step teaching) healing 95% continence 95%
anesthesia: spinal by anesthetic staff

bilateral epi up to “vault”, transverse incision at “vault”, sharp/blunt dissection up to parietal peritoneum whereby bladder traumatized, transverse bladder closure by single layer inverting serafit, sharp transverse opening of abdomen by “posterior colpotomy”, transverse widening of colpotomy, rectum displaced to R, no uterus identified, normal ovaries, transverse suturing of colpotomy peritoneum anteriorly onto avw remnant mucosa and posteriorly onto pvw remnant mucosa by serafit, creating neovagina by suturing peritoneum/muscularis of bladder onto lateral pelvis wall and onto peritoneum/muscularis of anterior rectum, epi closure
neovagina 11 cm long and broad, no stricture; deep packing with vaseline gauze foley ch 18; free bloody urine flow, euo/bw 12 cm, good anterior elevation, euo/b 2.3 cm normal bladder capacity (longitudinal diameter 12-2.3 = 9.5 cm) good fascia plate good position of uv-junction against middle third symphysis normal-width 2.5 cm good–quality urethra. euo in anatomic position

15.08.17 follow-up: nicely healed, not leaking at all, vagina broad 10-11 cm long pack

ba hanya ko kadan
pt 709  
zaria workshop  
vvf 834  
ba hanya; neovagina reconstruction

hik (sokoto)  
female 40 yr 17.07.17

surgeon: kees waaldijk  
assistant: kabir lawal

diagnosis: P0 ( alive), ba hanya ko kadan bco mayer-rokitanski-küster-hauser syndrome, married 25 yr ago pre(menarche), not living with husband, no menstruation, yes yankan gishiri, laparotomy 1x + urethra/vvf + ff graft 2x; normal ap diameter/wide pubic arch 90°, ar pos after the other ones left her she wants her new husband to stay with her ba hanya ko kadan i/v 2 cm cm

operation: kees neovagina reconstruction  
duration: 50 min (step-by-step teaching)  
anesthesia: spinal by anesthetic staff

bilateral epi, transverse incision at “vault”, sharp/blunt dissection thru ff graft up to parietal peritoneum, sharp transverse opening of abdomen by “posterior colpotomy”, transverse widening of colpotomy, no uterus identified, both ovaria high up, transverse suturing of colpotomy peritoneum anteriorly onto avw remnant mucosa and posteriorly onto pww remnant mucosa by serafit, creating neovagina by suturing bladder muscularis/peritoneum/muscularis lateral pelvis wall/peritoneum/muscularis of anterior rectum neovagina 12 cm long and broad, no stricture; deep packing with vaseline gauze foley ch 18; free urine flow, euo/bw 14 cm, good anterior elevation, euo/b 2.7 cm normal bladder capacity (longitudinal diameter 12-2.7 = 9.5 cm) good fascia plate good position of uv-junction against middle third symphysis epi closure normal-width 2.7 cm good–quality urethra_euo in anatomic position

15.08.17 follow-up nicely healed neovagina broad and 10 cm long pack
Pt 710  Zaria workshop  VVF 835
Pt 711  *span too wide; anterior/posterior trauma*  VVF 836

**SADD (Zaria)**  
Female  17 yr  17.07.17

**Surgeon:** Kees Waaldijk  
**Assistant:** Kabir Lawal

**Diagnosis:** PI (alive), large 3° cystocele + 2° cx prolapse without genuine incontinence, something coming out of vagina for 3 mth which started immediately following obstructed labor for 2 days, live female, married 2 yr ago post menarche 2 yr earlier, not living with husband, no menstruation, no (h/o) drop foot R (grade 5) and L (grade 5), no rvf, no yankan gishiri, eclampsia no; normal ap diameter/wide pubic arch 95°, ar pos, 2° cervix prolapse, longitudinal 3x1 cm median pc musculofascia defect euo/c 6 cm *never* leaking urine normal urethra_euo in anat pos euo/bw 12 cm, poor elevation, euo/b 1.0 cm (), i/v 11 cm

**Operation:**  
*Longitudinal musculofascia repair with cx re-anchoring*  
**Duration:** 25 min (*step-by-step teaching*)  
**Anesthesia:** Spinal by anesthetic staff

Small median epi, physiologic semicircular incision at 2 cm from euo parallel/within ruga folds, sharp dissection, 3x1 cm median longitudinal fascia defect, *longitudinal repair/rhaphy* of pc fascia at 2-6 cm from euo by serafit with proximal suture thru anterior cervix, now euo/b 2.2 cm, no urine thru euo on rest/cough/pressure, bilateral intact fixation of fascia onto atf/pubic bones, triple fixation of nelaton ch 18, transverse hemo static avw_pcf/symphysis_avw adaptation by 2x everting serafit, epi closure; free urine flow, euo/bw 12 cm, good elastic anterior elevation, euo/b 2.2 cm (*urethralization*) cervix mobile in anatomic position c0 normal bladder capacity (longitudinal diameter 12-2.2 = 9 cm) good fascia plate good position uv-junction against middle third symphysis normal-width 2.2 cm good–quality urethra_euo in anatomic position

**Follow-up:** 15.08.17  nicely healed, no cystocele, cervix properly fixed
pt 712

zaria workshop

anterior

vfv 837

hhk (Katsina) female 25 yr 17.07.17

surgeon: kees waaldijk
assistant: kabir lawal

diagnosis: PII (1 alive), cystocele_total 3° cervix prolapse c4 without genuine stress incontinence, something coming out of vagina for 8 yr which started spontaneously following first labor for < 1 day, at home live male, married 12 yr ago post(menarche 4 mth earlier), still living with husband, still menstruation, no drop foot R (grade 5) and L (grade 5), no vvf/rvf, no yankan gishiri, no eclampsia; normal ap diameter/ wide pubic arch 95°, ar pos never leaking urine (not even after reduction) euo/c 6 cm narrow urethra_euo in anatomic position euo/bw 15 cm, poor elevation, euo/b 1.3 cm, i/v 12 cm

operation: kees anatomic cervix suspension at L

duration: 15 min (step-by-step teaching) healing 95% continence 95%
anesthesia: spinal by anesthetic staff

small avw/ruga fold incision L with transverse extension up to cervix, sharp dissection to create wound area/surface, longitudinal opening free paravesical space, identification ischium spine, hemostatic fixation of cervix (with adherent fascia) onto L obturator internus muscle fascia/obturator membrane/ischium bone periost (frontally from parametrium attachment) by 2x seralon, euo/b 2.8 cm, no urine thru euo on rest/cough/pressure, triple fixation nelaton ch 16; free urine flow, euo/bw 12 cm, good elastic anterior elevation L with still rotational descent R, euo/b 2.8 cm normal bladder capacity (longitudinal diameter 12-2.8 = 9 cm) poor fascia plate good position of uv-junction against middle third symphysis good cervix fixation normal-width 3 cm good–quality urethra_euo in anatomic position

15.08.17 follow-up: nicely healed, not leaking at all, cervix properly fixed
pt 713 zaria workshop vvf 838
pt 714 iatrogenic vvf-soko 4x vvf 839

hads (sokoto) female 22 yr 18.07.17

surgeon: kees waaldijk
assistant: kabir lawal

diagnosis: P0, post IIa cervix prolapse c3 with genuine stress incontinence, some thing coming out of vagina, leaking urine for 7 yr that started immediately following yankan gishiri by wanzami, native medicine, married 9 yr ago post(menarche 2 mth earlier), not living with husband, still menstruation, drop foot R (grade 5) and L (grade 5), no vvf/rvf; normal ap diameter/pubic arch 85°, ar pos operated 5x (soko_ab 1x then kees 4x)

operation: cervix suspension L with closed euo-rhaphy

duration: 15 min (step-by-step teaching) healing 95% continence 60%

anesthesia: spinal by anesthetic staff

small aww/ruga fold incision L with transverse extension up to cervix, sharp dissection to create wound area/surface, longitudinal opening free paravesical space, hemostatic fixation of cervix (with adherent fascia) onto L obturator internus muscle fascia/obturator membrane/ischium bone periost (frontally from parametrium attachment) by 1x seralon (more is not possible), euo/b 1.5 cm, no urine thru euo on rest/cough/pressure, closed rhaphy of fibrosed open euo by 1x serafit, triple fixation of nelaton ch 16; free urine flow, euo/bw 12 cm, gool elastic anterior elevation L with still minimal rotational descent R, euo/b 1.5 cm

normal bladder capacity (longitudinal diameter 12-1.5 = 10.5 cm) good fascia plate poor position of uv-junction against caudad third symphysis normal-width 1.5 cm fibrosed urethra_euo in anatomic position good cervix fixation

15.08.17 follow-up: nicely healed, not leaking at all, cervix properly fixed
mmys (niger state)  female  23 yr  18.07.17

surgeon:  kees waaldijk
assistant:  kabir lawal

diagnosis: PII (all alive), cystocele_3° cervix prolapse c4 without genuine stress incontinence, something coming out of vagina for 6 yr that started spontaneously following last labor for 1 day, at home live female, married 10 yr ago post(menarche 5 mth earlier), not living with husband, menstruation still, no foot drop R (grade 5) and L (grade 5), no vvf/rvf, yankan gishiri no, no eclampsia; normal ap diameter/wide pubic arch 90°, median defect pc fascia, ar pos, operated 1x (niger state, somebody tried manchester) euo/c 5 cm never leaking urine normal urethra_euo in anat pos no objective stress incontinence (also not after reduction) euo/bw 12 cm, poor elevation, euo/b 2.1 cm cm

operation:  kees anatomic cervix suspension at L
duration:  15 min (step-by-step teaching) healing 95% continence 95%
anesthesia: spinal L4/L5 with 3 ml bupivacaine 0.5% by anesthetic staff

small avw/ruga fold incision L with transverse extension up to cervix, sharp dissection to create wound area/surface, longitudinal opening free paravesical space, identification ischium spine, hemostatic fixation of cervix (with adherent fascia) onto L obturator internus muscle fascia/obturator membrane/ischium bone periost (frontally from parametrium attachment) by 2x seralon, euo/b 3.1 cm, no urine thru euo on rest/cough/pressure, triple fixation nelaton ch 16, free clear urine flow, euo/bw 12 cm, good elastic anterior elevation at L, rotational descent at R, euo/b 3.1 cm (re-urethralization) normal bladder capacity (longitudinal diameter 12-3.1 = 9 cm) poor fascia plate good position of uv-junction against middle third symphysis good cervix fixation normal-width 3 cm good–quality urethra_euo in anatomic position

15.08.17 follow-up: nicely healed, not leaking at all, cerix properly fixed
pt 716  
zaria workshop  
vvf 841

ba hanya; neovagina reconstruction

mig (zamfara)  
female  
35 yr  
18.07.17

surgeon:  
kees waaldijk

assistant:  
kabir lawal

diagnosis:  
PI (0 alive), ba hanya ko kadan + postrepair incontinence for 15 yr which started following cs bco obstructed labor for 3 days, sb male, married 22 yr ago post (menarche 5 mth earlier), not living with husband, still menstruation, bilateral foot drop for 6 mth R (grade 5) and L (grade 5), no rvf, no yankan gishiri, yes eclampsia; normal ap diameter/pubic arch 85°, ar pos, cervix fixed 

excessive fibrosis

operated 6x

operation:  
kees neovagina reconstruction with repositioning of cervix

duration:  
60 min (step-by-step teaching) 
healing 95%  
continence 50%

anesthesia:  
spinal by anesthetic staff

bilateral epi, transverse incision at “vault”, sharp/blunt dissection up to parietal peritoneum, sharp transverse opening of abdomen by “posterior colpotomy”, sharp transverse widening of colpotomy, gv: no leakage, large uterus mass (12 cm 0) fixed to anterior abdominal wall, cervix fixed to R lateral pelvis wall, further opening of cervix canal with repositioning into neovagina, transverse suturing of colpotomy peritoneum anteriorly onto avw remnant mucosa laevolaterally from cervix under some tension and posteriorly onto pvw remnant mucosa by serefat creating neovagina by suturing peritoneum/muscularis of posterior uterus at 1 cm from isthmus onto peritoneum of sacrouterine ligaments and onto peritoneum/muscularis of anterior rectum, epi closure

neo vagina 11 cm long and broad, no stricture; deep packing with vaseline gauze 
foley ch 18; free urine flow, euo/bw 12 cm, good anterior elevation, euo/b 2.8 cm normal bladder capacity (longitudinal diameter 12-2.8 = 9 cm)  
good“fascia” plate

good position of uv-junction against middle third symphysis

normal-width 3 cm fibrosed poor–quality urethra_euo in anatomic position

15.08.17 follow-up:  
nicely healed, vagina broad 9 cm long
pt 717  zaria workshop  vvf 842
pt 125  ba hanya; neovagina reconstruction  rvf 134
flatus incontinence due to anterolateral traction by skin flap scar

ayjg (zamfara)  female  32 yr  19.07.17

surgeon:  kees waaldijk
assistant:  kabir lawal

diagnosis:  P0, congenital ba hanya ko kadan, yankan gishiri by wanzami 18 yr ago, native medicine, married 20 yr ago pre(menarche 1 yr late), not living with husband, still menstruation; normal ap diameter/wide pubic arch 90°, ar pos, cervix fixed, operated 3x vvf + 3x rvf with skin rotation flap L buttock (traction onto ant sphincter by skin flap scar; all op by kees in kats/soko) total urine continence, only flatus incontinence (anterior skin scar pulling) lying/aska/tissue removed (extensive –ectomy)

operation:  kees neovagina reconstruction with repositioning of cervix + sphincter
duration:  60 min (step-by-step teaching)  healing all 95%  continence all 95%
anesthesia:  spinal by anesthetic staff

bilateral epi, transverse incision at “vault”, sharp/blunt dissection up to parietal peritoneum, sharp transverse opening of abdomen by “posterior colpotomy”, sharp transverse widening of colpotomy, transverse suturing of colpotomy peritoneum anteriorly onto awv remnant mucosa/posterior cervix and posteriorly onto pvw remnant mucosa by serafit creating neovagina by suturing peritoneum/muscularis of posterior uterus at 1 cm from isthmus onto peritoneum of sacrouterine ligaments and onto peritoneum/muscularis of anterior rectum, epi closure
neovagina 12 cm long and broad, no stricture;  deep packing with vaseline gauze foley ch 18; free urine flow, euo/bw 12 cm, good anterior elevation, euo/b 1.5 cm normal bladder capacity (longitudinal diameter 12-1.5 = 10.5 cm)  good fascia plate poor position of uv-junction against caudad third symphys normal-width 1.5 cm good–quality urethra_euo in anatomic position longitudinal incision skin rotation scar, sphincter ani reinforcement by 1x serafit, transverse skin closure

15.08.17  follow-up:  nicely healed, flatus ok, vagina broad 8-9 cm long  pack
Pt 718 Zaria Workshop  VVF 843

Span too wide; anterior/posterior trauma

Afs (Katsina)  Female  27 yr  19.07.17

Surgeon: Kees Waaldijk
Assistant: Kabir Lawal

Diagnosis: PIV (2 alive), cystocele 3° cervix prolapse c4, rectocele without genuine stress incontinence, something coming out of vagina for 5 yr that started spontaneously following labor for 1 day, in hospital live male, married 12 yr ago post (menarche 2 yr earlier), still with husband, menstruation still, foot drop R (grade 5) and L (grade 5), no vvf/rvf, no yankan gishiri, eclampsia no; ap diameter/wide pubic arch 95°, median defect fascia, ar pos evo/c cm never leaking urine narrow urethra_evo in anat pos no objective stress incontinence (also not after reduction) evo/bw 12 cm, poor elevation, evo/b 1.5 cm i/v 12 cm

Operation: Kees anatomic cervix suspension at L
Duration: 20 min (step-by-step teaching) healing 95% continence 95%
Anesthesia: Spinal L4/L5 with 3 ml bupivacaine 0.5% by anesthetic staff

Small avw/ruja fold incision L with transverse extension up to cervix, sharp dissection to create wound area/surface, longitudinal opening free paravesical space, identification ischium spine, hemostatic fixation of cervix (with adherent fascia) onto L obturator internus muscle fascia/obturator membrane/ischium bone periost (frontally from parametrium attachment) by 2x seralon, evo/b 2.8 cm, no urine thru evo on rest/cough/pressure, foley ch 18; free clear urine flow, evo/bw 12 cm, good elastic anterior elevation at L, rotational descent at R, evo/b 2.8 cm (re-urethralization) normal bladder capacity (longitudinal diameter 12-2.8 = 9 cm) poor fascia plate good position of uv-junction against middle third symphysis good cervix fixation narrow 2.8 cm good–quality urethra_evo in anatomic position

15.08.17 Follow-up: nicely healed, not leaking at all, cervix properly fixed

Total 3° cx prolapse c4
pt 719

zaria workshop

ba hanya; neovagina reconstruction

rdbk (kano city)  female  29 yr  19.07.17

surgeon:  kees waaldijk
assistant:  kabir lawal

diagnosis:  PII (0 alive), ba hanya ko kadan for 9 yr which started following obstructed last labor for 2 days, sb male by cs, married 16 yr ago pre(menarche 4 mth later), not living with husband, still menstruation, bilateral foot drop for 6 mth R (grade 5) and L (grade 5), no rvf, no yankan gishiri, eclampsia yes; normal ap diameter/pubic arch 85°, ar pos, cervix fixed post IIAb urine incontinence, operated at least 2x (mmsh_kees)

operation:  kees neovagina reconstruction with repositioning of cervix

duration:  50 min (step-by-step teaching)  healing 95%  continence 50%

anesthesia:  spinal by anesthetic staff

bilateral epi, transverse incision at “vault”, sharp/blunt dissection up to parietal peritoneum, sharp transverse opening of abdomen by “posterior colpotomy”, rectum displaced/fixed to L pelvis wall, sharp transverse widening of colpotomy, transverse suturing of colpotomy peritoneum anteriorly onto avw remnant mucosa/posterior cervix and posteriorly onto pwv remnant mucosa by serafit, creating neovagina by suturing peritoneum/muscularis of posterior uterus at 1 cm from isthmus onto peritoneum of sacrouterine ligaments and onto peritoneum/muscularis of anterior rectum, ep closure neo vagina 11 cm long and broad, no stricture; deep packing with vaseline gauze foley ch 18; free urine flow, euo/bw 9 cm, good anterior elevation, euo/b 1.5 cm normal bladder capacity (longitudinal diameter 9-1.5 = 7.5 cm)  good fascia plate poor position of uv-junction against caudad third symphysis

open 1.5 cm poor–quality urethra_euo in anatomic position for incontinence surgery once neovagina healed

15.08.17  follow-up:  nicely healed, vagina broad 8-9 cm long

pack
pt 720  zaria workshop  vvf 845

span too wide; anterior/posterior trauma

farl (kano city)  female  36 yr  19.07.17

surgeon:  kees waaldijk
assistant:  kabir lawal

diagnosis:  PVII (6 alive), massive cystocele_3° cervix prolapse c4_rectocele without genuine stress incontinence, something coming out of vagina for 14 yr which started spontaneously following 4th labor for < 1 day, at home live female, married 24 yr ago pre(menarche 8 mth later), living with husband still, still menstruation, no foot drop R (grade 5) and L (grade 5), no vvf /rvf, no yankan gishiri, no eclampsia; ap diameter/wide pubic arch 95°, median defect pc fascia, ar pos
euo/c 8 cm  never leaking urine          narrow urethra_euo in anat pos
no objective stress incontinence (also not after reduction)
euo/bw 19 cm, poor elevation, euo/b 0.6 cm         i/v 12 cm

operation:  kees anatomic cervix suspension at L
duration:  15 min (step-by-step teaching)  healing 95% continence 95%
anesthesia:  spinal L4/L5 with 3 ml bupivacaine 0.5% by anesthetic staff

small avw/ruga fold incision L with transverse extension up to cervix, sharp dissection to create wound area/surface, longitudinal opening free paravesical space, identification ischium spine, hemostatic fixation of cervix (with adherent fascia) onto L obturator internus muscle fascia/obturator membrane/ischium bone periost (frontally from parametrium attachment) by 2x seralon, euo/b cm, no urine thru euo on rest/cough/pressure, foley ch 18, free clear urine flow, euo/bw 15 cm, good elastic anterior elevation at L, rotational descent at R, euo/b 2.5 cm (re-urethralization)

normal bladder capacity (longitudinal diameter 15-2.5 = 12.5 cm)  poor fascia plate
good position of uv-junction against middle third symphysis  good cervix fixation
normal-width 2.5 cm good–quality urethra_euo in anatomic position
15.08.17 follow-up:  nicely healed, not leaking at all, cervix properly fixed
ba hanya ko kadan

surgeon: kees waaldijk
assistant: kabir lawal

diagnosis: PI (0 alive), ba hanya ko kadan + 0.5 cm fibrosed urethrovesicovaginal fistuly R lungu IIAb, leaking of 6 yr which started following obstructed labor for 2 days, in hospital sb female, married 13 yr ago pre(menarche 1 mth later), not living with husband, no menstruation, foot drop R (grade 4) and L (grade 4), intraoperative iatrogenic type IIa rvf, no yankan gishiri, no eclampsia; normal ap diameter/pubic arch 85°, ar pos, cervix fixed, operated 7x (b/kebbi) euo/f 2.5 cm, f/c 0 cm severe mutilation
ba hanya ko kadan i/v 3 cm a/f 4 cm

operation: kees neovagina reconstruction; rvf-repair + uvvf-"repair"
duration: 100 min (step-by-step teaching) healing _u 95 _70% continence 50%
anesthesia: spinal by anesthetic staff

bilateral epi, transverse incision at “vault”, complicated sharp/blunt dissection up to parietal peritoneum thru severe fibrosis whereby rectum traumatized, transverse closure of 0.5 cm defect by single layer of inverting serafit, partial excision of posterior cervix, sharp transverse opening of abdomen by “posterior colpotomy”, sharp transverse widening of colpotomy, cervix opening not identified, incision at uvvf edge, sharp dissection, tension-free “closure” by single layer of inverting serafit, repositioning into neovagina, transverse suturing of colpotomy peritoneum anteriorly onto avw remnant mucosa bilaterally from cervix and posteriorly onto pvw remnant mucosa by serafit creating neovagina by suturing peritoneum/ muscularis of posterior uterus at 1 cm from isthmus onto peritoneum of sacrouterine ligaments and onto peritoneum/muscularis of anterior rectum, ep closure urine incontinence ++ neo vagina 10 cm long and broad, no stricture; deep packing with vaseline gauze foley ch 18; free urine flow, euo/bw 10 cm, good anterior elevation, euo/b 1.4 cm normal bladder capacity (longitudinal diameter 10-1.4 = 8.5 cm) good fascia plate poor position of uv-junction against caudad third symphysis normal-width 1.5 cm poor–quality urethra_euo in anatomic position

15.08.17 follow-up: nicely healed, stool ok, vagina broad 9 cm long pack
ba hanya; neovagina reconstruction

wagk (kano city) female 28 yr 20.07.17

surgeon: kees waaldijk
assistant: kabir lawal

diagnosis: PI (0 alive), ba hanya ko kadan + 1 cm 0 type IIBb fistula, leaking for 14 yr that started following obstructed labor for 2 days, in hospital sb female, married 16 yr ago pre(menarche 7 mth late), not living with husband, still menstruation, foot drop R (grade 4) and L (grade 4), no rvf, no yankan gishiri, yes eclampsia; normal ap diameter/pubic arch 85°, ar pos, cervix fixed, neourethra operated 3x (mmsh) euo/f 1 cm, f/c 2 cm

operation: kees neovagina reconstruction + uvf-"repair" + kwaskwarima

duration: 60 min (step-by-step teaching) healing _u_ 40% continence 50%

anesthesia: spinal by anesthetic staff

bilateral epi, transverse incision at “vault”, complicated sharp/blunt dissection up to parietal peritoneum, sharp transverse opening of abdomen by “posterior colpotomy”, sharp transverse widening of colpotomy, cervix opening/canal identified, transverse suturing of colpotomy peritoneum anteriorly onto avw remnant mucosa bilaterally from cervix/posterior cervix and posteriorly onto pvw remnant mucosa by serafit creating neovagina by suturing peritoneum/ muscularis of posterior uterus at 1 cm from isthmus onto peritoneum of sacrouterine ligaments and onto peritoneum/muscularis of anterior rectum, incision at fistula edge, sharp dissection, tension-free transverse urethra closure by single layer of inverting srafit, triple fixation nelaton ch 16, epi closure neo vagina 10 cm long and broad, no stricture; deep packing with vaseline gauze foley ch 18; free urine flow, euo/bw 13 cm, good anterior elevation, euo/b 3.5 cm normal bladder capacity (longitudinal diameter 13-3.5 = 9.5 cm) good fascia plate good position of uv-junction against middle third symphysis kwaskwarima normal-width 3.5 cm poor–quality urethra_euo in anatomic position

15.08.17 follow-up: nicely healed, vagina broad 9 cm long pack
pt 725  zaria workshop  vvf 850
pt 726  ba hanya; neovagina reconstruction  vvf 851

hsz (kano city)  female  36 yr  20.07.17

surgeon:  kees waaldijk
assistant:  kabir lawal

diagnosis:  PI (0 alive), ba hanya ko kadan + inoperable IIIB for 20 yr which started immediately following obstructed labor 1 day, in hospital sb male, married 23 yr ago pre(menarche 5 mth later), not living with husband, still menstruation, foot drop R (grade 4) and L (grade 4), rvf healed, yankan gishiri no, yes eclampsia; normal ap diameter/pubic arch 85°, ar pos, cervix fixed, total avw/fascia loss, major loss pc_iscsm loss, operated 2x rvf + 1x vvf (mmsh_kees) + many times by others in total 8x

operation:  kees neovagina reconstruction + assessment inoperable IIIB

duration:  60 min (step-by-step teaching)  healing 75%  continence

anesthesia:  spinal by anesthetic staff

bilateral epi, transverse incision at “vault”, complicated sharp/blunt dissection up to parietal peritoneum whereby uterus traumatized, sharp transverse opening of abdomen by “posterior colpotomy”, sharp transverse widening of colpotomy but compromised at L, transverse suturing of traumatized posterior uterus + serosa and transverse suturing colpotomy peritoneum posteriorly onto pvw remnant mucosa by serafit creating neovagina by suturing peritoneum/muscularis of posterior uterus to peritoneum of sacrouterine ligaments and to peritoneum/muscularis anterior rectum, however technic compromised at L and by heavy diarrheic stool contamination, epi closure neo vagina 8 cm long and “broad”, no stricture; deep packing with vaseline gauze nothing left of avw/fascia; cervix fixed onto cervix, bladder pening not identified

inoperable extensive IIIB

15.08.17  follow-up:  nicely healed, vagina broad 7-8 cm long  pack

ba hanya ko kadan
pt 727 zaria workshop vvf 852

**ba hanya; neovagina reconstruction**

asg (kano)  
female 40 yr 20.07.17

surgeon: kees waaldijk  
assistant: kabir lawal

diagnosis: PI (0 alive), ba hanya ko kadan for 26 yr thath started following obstructed labor for 1 day, in hospital sb male, married 27 yr ago post (menarche 2 mth earlier), not living with husband, menopause 3 yr ago, foot drop R (grade 5) and L (grade 5), rvf healed, no yankan gishiri, no eclampsia; normal ap diameter/narrow pubic arch 70°, ar pos, cervix not identified, operated 1x rvf + 3x vvf (kano post kees IIB inc (rotation flap L), empty pelvis, everything nicely healed

ba hanya ko kadan i/v 4 cm euo/bw 7 cm, euo/b 1.4 cm)

operation: kees neovagina reconstruction  
duration: 60 min (step-by-step teaching) healing 95% continence 5%

anesthesia: spinal by anesthetic staff

bilateral epi, transverse incision at “vault”, complicated sharp/blunt dissection up to parietal peritoneum, sharp transverse opening of abdomen by “posterior colpotomy”, sharp transverse widening of colpotomy, uterus/ovaries/tubes not identified, transverse suturing of colpotomy peritoneum anteriorly onto avw remnant mucosa bilaterally from cervix and posteriorly onto pvw remnant mucosa by serafit creating neovagina by suturing peritoneum/muscularis of bladder onto peritoneum of lateral pelvis and onto peritoneum/muscularis of anterior rectum, epi closure, fibrosis at L neo vagina 9 cm long and broad, no stricture; deep packing with vaseline gauze foley ch 18; free urine flow, euo/bw 7 cm, good anterior elevation, euo/b 1.4 cm moderate bladder capacity (longitudinal diameter 7-1.4 = 5.5 cm, no compliance poor position of uv-junction poor fascia plate never abd operation normal-width 1.5 cm medium–quality urethra_euo in anatomic position

15.08.17 follow-up: nicely healed, vagina broad 8-9 cm long pack
pt 127 katsina workshop rvf 136

**real inoperable ba hanya; iatrogenic rvf**

kig (kano) female 39 yr 20.07.17

surgeon: kees waaldijk
assistant: hafsa ibrahim

diagnosis: PI (0 alive), ba hanya ko kadan + inoperable IIb + intraoperative iatrogenic 2 cm 0 rvf type Ia for 25 yr which started following obstructed labor for 1 day, in hospital sb female, married 27 yr ago pre(menarche 1 yr later), not living with husband, still menstruation, foot drop R (grade) and L (grade), rvf, yankan gishiri, eclampsia; normal ap diameter/pubic arch 85°, ar pos, cervix fixed oped 2x (kano) including rvf-repair

operation: iatrogenic rvf-repair

operation: ba hanya ko kadan i/v 4 cm a/f 6 cm

duration: 45 min healing 75% continence 95%
anesthesia: spinal by anesthetic staff

bilateral epi, transverse incision at “vault”, complicated sharp/blunt dissection thru severe fibrosis whereby rectum traumatized at 2 places, transverse rectum closure by single layer of inverting serafit, further dissection up to parietal peritoneum but it is not wise to continue, so pvw adaptation by 2x serafit, epi closure

though vagina length now 8 cm it will close proximally

15.08.17 follow-up: nicely healed, stools ok, vagina 8 cm long pack

![ba hanya ko kadan](image)
Pt 728  Zaria workshop  VVF 853

*Ba hanya; neovagina reconstruction*

**Habd Kano**  
Female 25 yr 21.07.17

**Surgeon:** Kees Waaldijk  
**Assistant:** Kabir Lawal

**Diagnosis:** PI (0 alive), ba hanya ko kadan + post IIBb incontinence for 10 yr which started following obstructed labor for 1 day, in hospital sb male, married 12 yr ago post (menarche 1 mth earlier), not living with husband, still menstruation, foot drop R (grade 5) and L (grade 5), rvf healed, yankan gishiri no, eclampsia no; normal ap diameter/wide pubic arch 90°, ar pos, cervix fixed, operated 1x vvf + 1x rvf with rotation flap L (mmash_kees) ba hanya ko kadan i/v 1 cm euo/c 2 cm euo/bw 12 cm, euo/b 1.5 cm

**Operation:** Kees neovagina reconstruction  
**Duration:** 50 min (step-by-step teaching) healing 95% continence 20%

**Anesthesia:** Spinal by anesthetic staff

Bilateral epi, transverse incision at vault, sharp/blunt dissection up to parietal peritoneum, sharp transverse opening of abdomen by posterior colpotomy, sharp transverse widening of colpotomy, normal size uterus/adnexa, transverse suturing of colpotomy peritoneum anteriorly onto avw remnant mucosa/posterior cervix and posteriorly onto pvw remnant mucosa/skin rotation flap by serafit creating neovagina by suturing peritoneum/muscularis of posterior uterus at 1 cm from isthmus onto peritoneum of sacrouterine ligaments and onto peritoneum/muscularis of anterior rectum, epi closure neovagina 12 cm long and broad, no stricture; deep packing with vaseline gauze foley ch 18; free urine flow, euo/bw 1.5 cm, good anterior elevation, euo/b 2.3 cm normal bladder capacity (longitudinal diameter 12-2.3 = 9.5 cm) good fascia plate good position of uv-junction against middle third smphysis urine incontinence ++ "normal-width" 2.5 cm poor–quality urethra_euo in anatomic position If healed and if still incontinence for incontinence surgery

**15.08.17 Follow-up:** nicely healed, vagina broad 7-8 cm long pack

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*Ba hanya ko kadan*
pt 128  

zaria workshop  

total circumferential; “ba hanya”

myg (kebbi)  

female 33 yr 21.07.17

surgeon: kees waaldijk  
assistant: kabir lawal

diagnosis: PI (0 alive), pat: ba hanya, + 2x1 cm 0 rectovaginal fistula type IIa, total post mutilated IIb incontinence, leaking urine/passing stools pv for 17 yr which started immediately following obstructed labor for 2 days, in hosp sb male, married 19 yr ago post(menarche 1 yr earlier), no with husband, still menstruation, drop foot R (grade 4) and L (grade 4), yankan gishiri no, yes eclampsia; normal ap diameter/pubic arch 85°, ar pos short hanya 5-6 cm; operated 10x for vvf (kebbi/sokoto) a/f 2 cm, f/c 3 cm cm

operation: rvf-repair as first stage

duration: 50 min  
healing 95%  continence 95%
anesthesia: spinal by anesthetic staff

bilateral epi (planned for neovagina), rvf identified, transverse incision thru fistula, sharp dissection, tension-free longitudinal rectum closure by double layer of inverting interrupted/continuous serafit, transverse pvw adaptation by 2x everting serafit, not wise to continue with neovagina, epi closure, tight pack

euo/bw 11 cm, moderate elevation, fibrosis ++, euo/b 1.8 cm incontinence +++

normal bladder capacity (longitudinal diameter 11-1.8 = 9 cm)

mutilated open 1.8 cm poor-quality fibrosed urethra euo

15.08.17 follow-up: nicely healed, no stools/flatus pv for neovagina
pt 729  
zaria workshop  
vvf 854

ba hanya; neovagina reconstruction

rg (kano city)  
female  
29 yr  
21.07.17

surgeon: kees waaldijk
assistant: kabir lawal

diagnosis: PI (alive), ba hanya ko kadan + post IIAb incontinence for 15 yr which started immediately following cs bco obstructed labor for 1 day, live male, married 17 yr ago pre(menarche 1 yr later), not living with husband, still menstruation, foot drop R (grade 5) and L (grade 5), no rvf, no yankan gishiri, no eclampsia; normal ap diameter/pubic arch 85°, ar pos, cervix fixed  
euo/c 2.5 cm, euro/bw 12 cm, good elevation, euro/b 1.1 cm  
ba hanya  
i/v 3 cm  
operated 2x rotation flap L  
buttock (mmsh_kees)

operation: kees neovagina reconstruction

duration: 45 min (step-by-step teaching)  
healing 95%  
continence 50%  
anesthesia: spinal by anesthetic staff

bilateral epi, transverse incision at vault, sharp/blunt dissection up to parietal peritoneum, sharp transverse opening of abdomen by posterior colpotomy, normal uterus/ad neixa, transverse suturing of colpotomy peritoneum anteriorly onto avw remnant mucosa/posterior cervix and posteriorly onto pvw remnant mucosa/skin flap by serafit creating neovagina by suturing peritoneum/muscularis of posterior uterus at 1 cm from isthmus onto peritoneum of sacrouterine ligaments and onto peritoneum/muscularis of anterior rectum, epi closure

neo vagina 12 cm long and broad, no stricture; deep packing with vaseline gauze foley ch 18; free urine flow, euro/bw 12 cm, good anterior elevation, euro/b 1.6 cm normal bladder capacity (longitudinal diameter 12-1.6 = 10.5 cm)  
good fascia plate poor position uv-junction against caudad third symphysis minimal urine incontinence normal-width 1.6 cm poor–quality urethra_euo in anatomic position

15.08.17 follow-up: nicely healed, vagina broad 9 cm long  
pack
pt 730 zaria workshop  vvf 855
pt 5369/661 katsina  vvf 6867/rvf 870
vvf 6951/7133  ba hanya; neovagina reconstruction 7550/8268/9031

zsf (katsina)  female  26 yr  22.07.17

surgeon:  kees waaldijk
assistant:  kabir lawal

diagnosis:  PI (0 alive), ba hanya + monthly lower abdominal pain + light post IIAb inc for 11 yr which started following obstructed labor for 2 days, in hospital sb male, married 13 yr ago post(menarche 2 mth earlier), not living with hus band, no menstruation, foot drop R (grade 5) and L (grade 5), rvf healed, no yankan gishiri, yes eclampsia; normal ap diameter/pubic arch 85°, ar pos, cervix not identified; operated 1x rvf + 6x vvf

operation:  kees neovagina reconstruction
duration:  90 min (step-by-step teaching) healing 95% continence 75%
anesthesia:  spinal by anesthetic staff

bilateral epi, transverse incision at “vault”, complicated sharp/blunt dissection up to parietal peritoneum thru fibrosis ++ whereby rectum minimally traumatized, transverse rectum repair by single layer of nmverting serafit, sharp transverse opening of abdomen by “posterior colpotomy”, normal uterus identified but retracted, no sign of hematometra (needle aspiration, transverse suturing of colpotomy peritoneum anteriorly onto awv remnant mucosa and posteriorly onto pvw remnant mucosa by serafit creating neovagina by suturing peritoneum/muscularis of posterior uterus at 1 cm from isthmus onto peritoneum of sacrouterine ligaments and onto peritoneum/muscularis of anterior rectum, epi closure nb troublesome oozing at R but complete hemostasis neo vagina 9 cm long and broad, no stricture; deep packing with vaseline gauze foley ch 18; free urine flow, euo/bw 9 cm, good anterior elevation, euo/b 1.6 cm normal bladder capacity (longitudinal diameter 9-1.6 = 7 cm) good fascia plate poor position of uv-junction against caudad third<symphysis still incontinence + normal-width 1.6 cm medium–quality urethra_euo in anatomic position

15.07.17 follow-up:  nicely healed, vagina broad 10 cm long pack

ba hanya ko kadan
mechanism of obstetric trauma

obstetrics constitutes always a major challenge to all pelvis organs with their different structures and there are several mechanisms by which the intrapelvic organs may be affected which will influence the functional pelvis anatomy in one way or the other

first by hormonal flooding

second by continuously increasing hydrostatic pressure due to pregnant uterus

third by dilatation of the cervix with opening up of the intrapelvic urogenitodigestive diaphragm

fourth by direct or indirect cutting thru of the head thru the cervix, thru the gap between the puborectalis ledges and thru the opening within the perineum outlet diaphragm

fifth by shearing forces during actual childbirth when the head passes thru the cervix, thru the vagina, thru the gap between the levator ani ledges and thru the opening in the perineum outlet diaphragm

sixth by compression of the soft tissues between the hard fetal skull and the hard bony maternal pelvis

seventh iatrogenic by intervention by health workers

eighth eclampsia

i hormonal flooding
all the tissues will first “hypertrophy” to withstand the increased hydrostatic pressure and later on will soften as preparation for childbirth and will involute during the puerperium

ii hydrostatic pressure
since the fetus and the uterus will grow slowly there is a continuously increasing hydrostatic pressure which may traumatize the intrapelvic urogenitodigestive diaphragm despite “hypertrophy”; in the involution phase defects may be resolved spontaneously or small defects remain
with subsequent pregnancies/deliveries these remaining defects may become larger up to a point where support of the urinary continence mechanism becomes defective and/or the securing/stabilization of the organs become defective

iii dilatation of cervix + opening of intrapelvic urogenitodigestive diaphragm
during the first stage of labor the cervix will efface and the urogenitodigestive diaphragm will open up with possible trauma to anchoring of the cervix into this diaphragm when the head passes thru this opening it may further stretch/traumatize the tissues either bluntly or sharply

iv cut-thru trauma
when the passing of the head thru the birth canal goes too quick or when the birth canal is not fully dilated and the tissues have not time to stretch the head may cut thru the tissues either bluntly or sharply as
blunt cut-thru
in combination with stretching the bilateral ledges of the puborectalis muscles may be traumatized
in combination with stretching the perineum outlet diaphragm may be traumatized resulting in a wide introitus
sharp cut-thru
when the cervix is not fully dilated the head may further traumatize the cervix and its anchoring into the intrapelvic urogenitodigestive diaphragm
when the perineum outlet is too stiff the head may cut thru the perineum, sphincter ani and rectum resulting in the complex sphincter ani rupture

v shifting/shearing
when the head of the infant passes thru the birth canal always shearing will take place in minor or major form
between the head and the vagina wall
between the vagina wall and the intrapelvic urogenitodigestive diaphragm,
between the urogenitodigestive diaphragm and its attachment to the pubis bone and obturator internus muscle fascia and
between the arcus tendineus of the levator ani muscles and the obturator internus muscle fascia

vi compression trauma
when the head passes thru the vagina there will be compression of the soft tissues between the hard fetal skull and the hard maternal bony pelvis
normally this is not a problem during physiologic childbirth but when obstructed labor develops which is not relieved in time pressure necrosis will develop in an endless variety; from minimal to extensive anatomic tissue loss, with fistula development

vii iatrogenic trauma
additional trauma by episiotomy, by vacuum, by forceps, by internal version and pedal extraction, by craniotomy or by cesarean section

viii eclampsia
may cause death, stroke, mental confusion, transitional blindness

discussion
there are always tissue changes and tissue trauma during pregnancy and childbirth even in physiologic pregnancy/labor
normally these changes/trauma will be resolved during the involution period of the puerperium though small defects may remain
repeat pregnancies/deliveries will repeatedly add to these small defects and may result in real pathologic defects
however, when labor becomes obstructed and this is not relieved in time by active intervention pressure necrosis will develop resulting in an endless variety of anatomic tissue loss with devastating consequences for the woman affected

conclusion
the obstetric fistula is more than only a fistula and has to be handled within the context of the complex obstetric trauma
kees neovagina reconstruction

as solution for ba hanya

step-by-step pure vagina operation technic

under spinal anesthesia

introduction
ba hanya or gynatresia due to the obstetric trauma is a major problem confronting the woman and the obstetric trauma surgeon
conservative treatment is by pressure using different devices, but this requires patience and patient compliance and does not work in our setting
there are several technics using skin flaps but these are not very satisfactory, also since patient compliance is from poor to nonexisting
then the propagated technic is the sigmoid neovagina whereby a sigmoid loop is used to fill up the space between the bladder/cervix and the rectum with an end-to-end sigmo idosigmoidostomy with double approach abdomen and vagina
however it is complicated with high rate of intra- and postoperative complications and requires long term general anesthesia, blood bank, substitutes vagina mucosa by bowel mucosa with non-vagina flora and with (smelling) discharge; the cosmetic/functional results are not optimal
the davydov technic also requires a double approach vagina and abdominal endoscopy and needs also general anesthesia and expensive high-tech equipment; so this is out of the scope as well

since the ideal is to reconstruct a neovagina into which the cervix is ending (menstruation, pregnancy) more or less in line with the functional pelvis anatomy the author developed the following pure vagina technic which can be performed in almost any center under spinal anesthesia using normal long vagina instruments with minimum blood loss and relatively short duration of 45-100 min (which will be far shorter once sufficient expertise has been gained) with neovagina as lined by vagina mucosa as re-epithelized peritoneum with normal flora in line with the functional pelvis anatomy so far no major intra- and postoperative complications were encountered with a good cosmetic and functional result

step-by-step reconstruction kees neovagina

a in the exaggerated lithotomy position

b bilateral episiotomy (within skin lines) up to the “vault” for good exposure; of course many will boast this can be done without an episiotomy but that will restrict exposure and instrument manipulation with high chance of complications and poor result

c indwelling foley bladder catheter for emptying bladder and as orientation during tunnel creation/dissection
d transverse incision “vagina vault”; if cervix present as “posterior colpotomy”

e sharp/blunt creation of tunnel up to parietal peritoneum; the most difficult part due to fibrosis/scar tissue; whereby either the bladder or the rectum may be traumatized to be repaired immediately

f sharp transverse opening of abdomen as posterior colpotomy

g sharp/blunt transverse widening of colpotomy up to pelvis wall in order to prevent neovagina stricture ensuring a broad vagina

h identifying cervix, if present, deblock cervix and (re)positioning cervix into neovagina

i suturing the anterior colpotomy peritoneum bilaterally from cervix (so opening into neovagina) onto what is left of anterior vagina wall by polyglycolic acid

j suturing the posterior colpotomy peritoneum onto what is left of posterior vagina wall by polyglycolic acid; nb the posterior colpotomy peritoneum is thick so it can be used to cover any repaired intraoperative rectum trauma

k identifying uterus and suturing posterolateral uterus peritoneum (serosa) bilaterally onto sacrouterine ligaments by polyglycolic acid closing the space between the uterus (up to 1-2 cm proximally from isthmus) and lateral pelvis wall

l suturing posterior uterus peritoneum (serosa) at 1-2 cm proximally from isthmus onto anterior rectum serosa at 12-14 cm from anus by polyglycolic acid closing the abdomen in such a way that the proximal anterior rectum wall will be the neovagina vault

m closure of episiotomies according to plastic surgery principles

n leave indwelling foley catheter for couple of days

o deep vagina vaseline pack up to neovagina vault for 5 days, then renew pack for 5 days up to 25-30 days and further keeping vagina open by silicone vagina dilator

p to start sexual intercourse 4-5-6 weeks after operation; after removal of last pack

in congenital mayer-rokitansky-küster-hauser syndrome the posterior bladder serosa/peritoneum is used instead of the uterus serosa/peritoneum

discussion

the procedure is straightforward, safe and gives good results and is the procedure of choice by the author and less traumatic and far faster than any other procedure

the bilateral episiotomy within the skin lines up to the vault is crucial in order to get good access to the operation field, for colpotomy widening up to bilateral pelvis wall and for instrumentation
the most difficult part is the dissection/creation of a tunnel within the fibrosis up to the parietal peritoneum whereby either the bladder or the rectum may be traumatized to be repaired immediately and then covered by thick posterior colpotomy peritoneum

dissect within 3 months the peritoneum lining of the neovagina will completely epithelize into normal vagina mucosa with normal non-smelling vagina flora without discharge

since the cervix is opening into the neovagina it is possible for the woman to become pregnant; since the fixation is at 1-2 cm to isthmus the fundus can grow into the abdomen without compromising the rectum; an elective cesarean section is recommended

the neovagina is totally in line with the functional pelvis anatomy whereby the intrapelvic urogenitodigestive diaphragm is kept intact and even may be reinforced by part of the posterior uterus/isthmus supporting the urine continence mechanism and preventing urogenital and digestive prolapse

it differs from other technics as described

first pure vagina procedure
second no incision/dissection and then pulling of peritoneum up to vulva
third sharp/blunt transverse dissection of colpotomy up to ischial spines in order to prevent stricture of neovagina and to create broad vagina
fourth transverse suturing anterior colpotomy peritoneum bilaterally from the cervix (so opening into neovagina) onto what is left of anterior vagina wall (mucosa)
fifth transverse suturing the thick posterior colpotomy peritoneum onto what is left of posterior vagina wall (mucosa)
sixth separate bilateral suturing of posterolateral uterus serosa onto sacrouterine ligaments
seventh anterior proximal rectum wall as vault instead of (only) circumferentially closed peritoneum
eighth neovagina lined by original vagina mucosa, original parietal peritoneum of pelvis and original visceral peritoneum of organs and so totally in line with the functional pelvis anatomy and
ten tenth after 3 months whole neovagina lined by normal vagina mucosa with non-smelling normal vagina flora without discharge; as opposite to sigmoid neovagina with bowel mucosa and smelling bowel mucus discharge

however, the author could not find step-by-step descriptions of the other technics, only some general principles; if they exist and if necessary the author will adapt his claims and comments accordingly
ba hanya (gynatresia)

fibrosis/scar tissue

plane of dissection

after dissection + freeing/deblocking of cervix

anterior colpotomy peritoneum adaptation onto anterior vagina wall remnant bilaterally from cervix

anterior colpotomy peritoneum adapted bilaterally from cervix
posterior colpotomy peritoneum adaptation onto posterior vagina wall remnant

point of fixation posterior uterus peritoneum onto anterior rectum serosa/muscularis

reconstruction completed

normal vagina

kees neovagina
kees neovagina

experience so far in 45 patients
within 9-mth period november 2016 thru july 2017

characteristics

approach      vagina
anesthesia    only spinal anesthesia
instruments   normal long vagina instruments
personnel     surgeon + assisting theater nurse
operation time on the average 60 min with a range of 45-100 min
blood loss    on the average 50-70 ml with a range of 40-150 ml
in line with  functional pelvis anatomy

no major intraoperative complication

bladder/rectum trauma  in 8 patients which was repaired immediately and healed completely

not a single postoperative complication

inoperable ba hanya 1 patient with 6-8 cm long fibrosis trajec which had to be terminated since it would have been unwise to continue

recurrence 2 patients due to problems with packing and no compliance

positive spin off

in some patients with postrepair incontinence due to traction by fibrosis/fixed cervix traction was neutralized

in some patients with inoperable urine/stool fistulas these fistulas became “operable”

conclusion

the kees neovagina reconstruction seems to be a safe solution for women with ba hanya (gynatresia) either due to obstetric trauma or otherwise and has become standard in our program and can be recommended to any one
cervix prolapse

introduction

the pelvis organs including the cervix are suspended within the corpus intrapelvinum or connective tissue organ/body of pelvis as matrix

one of its specialized structures is the intrapelvic urogenitodigestive diaphragm which if intact prevents the high(er)-pressure organs from prolapse first into the zero- or low-pressure vagina and then if not corrected thru the vagina to the outside

once defects develop within the intrapelvic urogenitodigestive diaphragm the process of prolapse starts

the location of the defect within this diaphragm determines which high-pressure organ, urethra, bladder, cervix/uterus, intraperitoneal contents, (ano)rectum will prolapse into the zero- or low-pressure vagina

since the distal vagina is anchored into the perineum outlet diaphragm the proximal vagina walls are dragged with the organ(s) like intussusception

though pelvis organ prolapse involves multiple organs we would like to concentrate upon cervix/uterus prolapse even when combined with other organs

the cervix is anchored into the intrapelvic urogenitodigestive diaphragm and as such can be considered as the centrum tendineum intrapelvinum since all the musculofascia structures are firmly attached to it

the normal anatomic position of the cervix is highly variable and depends upon body position such as standing, sitting, squatting, lying and upon the filling of the adjacent organs like bladder uterus, vagina and rectum and upon hydrostatic abdominal pressure up to some 3-4 cm proximally from the hymen ring

once the cervix herniates/comes nearer to the hymen ring one speaks of prolapse which according to the pop-q system can be classified as

- stage c0 normal anatomic position up to –3 to –4 cm proximally from hymen
- stage c1 deepest point of cervix up to –2 cm proximally from hymen
- stage c2 deepest point of cervix from –1 cm proximally to +1 cm out of hymen
- stage c3 deepest point of cervix more than +2 cm out of hymen
- stage c4 total cervix/uterus prolapse far out of hymen/vulva

the position in which the prolapse is most prominent is squatting + cough
cervix prolapse c1 and c2

introduction pop q c1 and c2

when the lowest point of the cervix comes up to 2 cm proximally from hymen ring this is called cervix prolapse c1 according to the pelvis organ prolapse quantification system

this is a frequent finding in parous females

normally this does not need surgery

when the lowest point of the cervix reaches between 1 cm proximally and 1 cm distally from the hymen ring this is called cervix prolapse c2

this may need reconstructive surgery if the woman complains about it or if combined with urine incontinence; as part of the operation technic

genuine intrinsic urine incontinence is frequently combined with cervix prolapse c1 or c2 in combination with wide pelvis as expressed by pubic arch of ≥ 90°

kees intrapelvic urogenitodigestive diaphragm reconstruction

with cervix re-anchoring

under spinal anesthesia in the exaggerated lithotomy position

a measure pubic arch in degrees
b measure vagina length in cm
c suture both labia minora onto inner side of the upper legs
d check for urine intrinsic incontinence by asking the patient to cough with cervix prolapse and after reduction of the prolapse
e if necessary a median episiotomy can be performed but normally this is not indicated since wide pubic arch of ≥ 90°

f place self-retaining auvard speculum over posterior vagina wall = pvw
g measure distance euo to bladder wall = euo/bw in cm by metal sound
h insert foley ch 18 catheter and drain bladder half; leave some urine inside to check later for bladder trauma (bloody urine)
i remove foley catheter

j measure urethra length= euo/b in cm; normally this is reduced ≤ 2 cm (vesicalization) due to rotational descent of posterior urethra wall/uv-junction/bladder base
k then calculate longitudinal bladder diameter as euo/bw minus euo/b in cm
l physiologic large curved incision anterior vagina wall = avw at 2 cm from euo within ruga folds towards both underlying ischium spines
m sharp dissection of avw up to cervix so pubocervical musculofascia (as part of the intrapelvic urogenitodigestive diaphragm) becomes exposed
n identify the musculofascia; do not look for a fascia but look for smooth muscle fibers
o measure the extent of the longitudinal median defect within the intrapelvic urogenitodigestive diaphragm in cm
p reconstruct the intrapelvic urogenitodigestive diaphragm by longitudinal repair of the defect by single layer of polyglycolic acid (vicryl)
q make sure the most proximal sutures picks up the cervix as well so the cervix will be re-anchored into its anatomic position as centrum tendineum intrapelvinum
r check if the intrapelvic urogenitodigestive diaphragm is well fixed onto the pubic bones and its bilateral arcus tendineus fasciae = atf
s if not refix the pubocervical musculofascia onto its anatomic origin: pubic bones and atf
t check if the cervix is now mobile in its anatomic position; if not see next chapters
u check for incontinence by asking the patient to cough
v reinsert foley catheter
w check for urine flow; catheter inside bladder, at least one urine functioning and patient not in shock
x if bloody urine one knows bladder has been traumatized; this will heal by longer post operative catheterization
y remove catheter
z measure urethra length again
aa normally this will be 1-2 cm more than at the beginning (re-urethralization) since the repaired intrapelvic urogenitodigestive diaphragm ensures physiologic configuration of urine continence mechanism
ab adapt avw by everting interrupted vicryl or nylon sutures ensuring hemostasis
ac reinsert foley catheter and leave it for couple of days
ad vagina pack up to the preference of the surgeon

discussion
cervix prolapse c1 and c2 are frequently found and only need surgical repair on special wish or as part of the operation technic for genuine urine intrinsic incontinence
genuine intrinsic/stress incontinence
cervix prolapse c1 and c2

physiologic incision anterior vagina wall

anterior vagina wall dissected median defect pubocervical musculofascia

repair pubocervical musculofascia first proximal suture thru cervix

longitudinal repair pubocervical musculofascia

longitudinal repair pubocervical musculofascia

adaptation anterior vagina wall
mutilating incision anterior vagina wall

physiologic incision anterior vagina wall

additional fixation sutures at 0 and 2 cm
(sub)total cervix prolapse c3 and c4

introduction pop q c3 and c4

when the lowest point of the cervix comes up to +3 cm or more distally outside the hymen ring this is called cervix prolapse c3 according to the pelvis organ prolapse quantification system

when the cervix/uterus comes out completely from the introitus/vulva this is called cervix prolapse c4

cervix/uterus prolapse c3 and c4 are normally combined with wide pelvis as expressed by pubic arch of ≥ 90°; however, they are normally not combined with genuine intrinsic incontinence though narrow shortened urethra is found; though the combination is possible

though in the industrialized world cervix prolapse c3 and c4 is not so prevalent and if present is mostly found in elderly women

in africa it is probably as prevalent as the obstetric fistula and found in all age groups already after only one delivery at age 15 years and even congenital

there are 2 mechanisms of action

the most common is dis-anchoring of the cervix from the intrapelvic urogenitodigestive diaphragm by hydrostatic intraabdominal pressure combined with a wide pelvis

far less common is by extensive necrotic soft tissue loss due to prolonged obstructed labor combined with normal or narrow pelvis

there are many operation technics, all with their success, complication and failure rate

over the years the author developed safe evidence-based technics for two different groups of women

a for women older than 60 years and those without genuine intrinsic incontinence fixation of the L cervix onto the internal obturator fascia with 2 nylon sutures thru the upper brim = origin of the obturator internus muscle/obturator membrane/ischium bone periost at the posterior edge of the obturator foramen 4 cm from ischium spine just frontally from the attachment of the parametrium to the pelvis wall so that the cervix (with adherent pubocervical musculofascia) will be in direct broad contact and unite with the obturator internus fascia forming a kind of strong “ligament” by a mini-invasive approach taking only 5 min

b for women up to 60 years of age and those with major incontinence reconstruction of the median defect within the intrapelvic urogenitodigestive diaphragm with re-anchoring of the cervix and then if necessary fixation of the cervix onto the obturator internus fascia; taking some 25-30 min

of course the age of the woman should be flexible depending upon her general health and so should be the operation technic whilst the principles remain the same
kees anatomic cervix fixation
solution for total cervix/uterus prolapse
step-by-step pure vagina mini-invasive operation technic
under spinal anesthesia

a in exaggerated lithotomy position
b check for urine (in)continence before and after reduction
c measure longitudinal bladder diameter and
d measure urethra length
e small 2 cm longitudinal incision L anterior vagina wall in ruga folds
f with transverse extension up to L cervix
g and quartercircular extension at L cervix
h sharp dissection to create ample wound surface area for good broad fixation
i sharp opening L paravesical space; normally this space is free
j identification of ischium spine
k place two nonabsorbable nylon sutures thru brim of obturator internus muscle/obturator membrane/ischium bone periost frontally from parametrium attachment some 4 cm from ischium spine using sharp deschamps aneurysm needle and leave them long
l then suture both ends of one suture thru posterior cervix and
m both ends of the other suture thru anterior cervix
n fix the posterior cervix onto the supraspinous obturator internus muscle by tight tying of first suture without loose loop
o fix the anterior cervix onto the supraspinous obturator internus muscle by tight tying of second suture without loose loop
p check fixation by pulling onto cervix
q check urethra length again; normally this has increased by at least 1-2 cm
r check hemostasis
s leave indwelling foley bladder catheter for couple of days

operation time 5 min
blood loss 50 ml
total cervix prolapse

incision

dissection anterior vagina wall

first fixation suture thru posterior cervix

second fixation suture thru anterior cervix

fixation sutures tied without loose loop end result
origin obturator internus muscle

fixation point cervix
onto obturator internus fascia left
kees intrapelvic urogenitodigestive diaphragm reconstruction
with cervix re-anchoring and anatomic cervix fixation
for total cervix prolapse in patients younger than 60 years
or if combined with genuine intrinsic incontinence
step-by-step pure vagina operation technic
under spinal anesthesia

a in exaggerated lithotomy position
b check for (in)continence before and after reduction
c reduction of cervix
d measure longitudinal bladder diameter and
e measure urethra length
f physiologic curved anterior vagina wall incision at 2 cm to euo
g sharp aw dissection up to cervix to
h expose pubocervical musculofascia; look for smooth muscle tissue
i identify median longitudinal defect within intrapelvic urogenitodigestive diaphragm
j longitudinal repair of median defect with proximal suture thru cervix (as centrum tendineum intrapelvinum) re-anchoring the cervix
k check for (in)continence and
l if necessary complete reconstruction of intrapelvic urogenitodigestive diaphragm and
m if necessary sharp opening L paravesical space and
n continue cervix fixation as explained already
o check fixation by pulling onto cervix
p check urethra length again; normally this has increased by at least 1-2 cm
q check hemostasis
r leave indwelling foley bladder catheter for couple of days

operation time 25-40 min; on the average some 30 min
blood loss 50-150 ml; on the average some 100 ml
discussion

the rationale of the technic is to bring the lateral cervix (+ adherent musculofascia) into direct broad contact with the obturator internus muscle fascia

so after healing a broad “ligament” will be formed keeping the cervix in place as is seen after suture removal 6 mth after operation

some 30-40% of the younger patients reported whilst being pregnant and some after subsequent vaginal delivery and the cervix was found mobile in the midline in its anatomic position c0-c1

this “ligament” is so strong that in one patient after 5 subsequent vaginal deliveries the cervix was found mobile in the midline in anatomic position c0-c1

the transverse incision thru the anterior vagina wall up to the cervix will heal with some kind of scar contracture since deliberately it is perpendicular to the natural tissue forces as indication by the ruga folds

as positive spin-off minor forms of urine incontinence will be cured as well since the pubocervical musculofascia as anterior part of the intrapelvic urogenitodigestive diaphragm is elevated with anterior movement of the posterior urethra wall resulting in re-urethraization of the vesicalized urethra with improvement of the configuration of the anatomic continence mechanism and increased outflow resistance

and important point is to identify the ischium spine and from there onwards identify the superior brim/origin of the obturator internus muscle

the exact point of fixation is some 4 cm cephalad/anteriorly from the ischium spine where the sharp aneurysm needle should go through the brim of the obturator internus muscle (at its origin), thru the obturator membrane and thru the ischium bone periost at the origin of the internus obturator muscle at the junction obturator membrane/ischium bone at the posterior edge of the obturator foramen and frontally from the attachment of the parametrium

in the beginning the fixation point was thru the ischium bone periost just anteriorly from the ischium spine but though the fixation was safe and ok there was a high incidence of large neo-cystocele development since the musculofascia was pulled down

since we changed our fixation point with elevating the musculofascia there was no neo-cystocele development

the paravesical spaces are an open book to the author due to his extensive obstetric trauma reconstructive surgery

for a right-handed surgeon fixation at L is the most convenient way; for a left-handed surgeon fixation at R is the most convenient

if the fixation fails or if it should recur after another vaginal delivery exactly the same procedure is followed either on the same side or on the other side
Kees cervix fixation for total cervix/uterus prolapse

Over the years a uterus/cervix sparing technic has been developed according to the functional pelvis anatomy so exact knowledge of anatomy needed

In elderly patients who only want nothing hanging out

Pure vagina technic under spinal anesthesia

With two nylon sutures the cervix is fixed onto L obturator internus muscle fascia/obturator membrane/ischium bone periost into its anatomic position

Operation time 5 minutes

Blood loss not up to 50 ml without exception

Monofilament sutures to be removed after 6 months though they can stay in for life

No complications were encountered

In younger patients who still want children

In addition to this anatomic-correct fixation

Longitudinal repair of the median defect within the intrapelvic urogenitodigestive diaphragm thru which the cervix prolapsed with cervix re-anchoring

Operation time 25-30 minutes no complication encountered

Blood loss some 100-150 ml

Results

So far 348 patients have been operated with excellent results

Most of the younger patients became pregnant and delivered again (mostly vaginally) with afterwards the cervix still in anatomic position

One patient delivered 5x vaginally with cervix still in its anatomic position

Concomitant urine incontinence was cured at the same time due to urethralization as positive spin-off effect of the technic

In the beginning in some 10% of patients there was a failure with recurrence of the prolapse; they were operated again using the same technic at the same or the opposite side with good results; however, with increasing experience and creating ample wound surface for better broad contact failure rate dropped to below 2-5%

Conclusion: These reconstructive technics are safe and effective
abbreviations

vvf = vesicovaginal fistula
rvf = rectovaginal fistula
uvvf = urethrosvesicovaginal fistula
vcvf = vesicocervicovaginal fistula
vuvf = vesicouterovaginal fistula

cx = cervix
avw = anterior vagina wall
pvw = posterior vagina wall
pcmf = pubocervical musculofascia
atf = arcus tendineus fasciae
atlam = arcus tendineus of levator ani muscle
lam = levator ani muscle
pcm = pubococcygeus muscle
ilcm = iliococcygeus muscle
iscm = (ischio)coccygeus muscle
iom = obturator internus muscle
pm = piriformis muscle
sul = sacrouterine ligament
bl = broad ligament
cl = cardinal ligament

ch = charrière
g = gauge
h = hegar

p = parity
sb = stillborn
cs = cesarean section
sth = subtotal hysterectomy
tah = total abdominal hysterectomy
tvh = total vaginal hysterectomy
euo = external urethra opening
iuo = internal urethra opening
uv(junction) = urethrovesical (junction)

euo/f = distance between euo and fistula
f/c = distance between fistula and cervix
f/v = distance between fistula and vagina vault;
euo/b = distance between euo and catheter balloon
euo/bw = distance between euo and bladder wall (fundus)
a/f = distance between anus and (rectovaginal) fistula
i/v = distance between introitus and vagina vault; vagina length

pa = pubic arch
ap = anterior to posterior pelvis diameter
ar = anal reflex

gm = gastrocnemius muscle
sm = soleus muscle
at = achilles tendon

min = minute
hr = hour
wk = week
mth = month
yr = year

R = right
L = left

bladder capacity by longitudinal diameter (euo/bw minus euo/b)
small ≤ 4 cm
moderate 5-6 cm
normal 7-12 cm
transitional 13-15 cm
increased ≥ 16 cm
total cervix prolapse

dissection of anterior vagina wall

first fixation suture thru posterior cervix

second fixation suture thru anterior cervix

end result fixation sutures tied without loose loop