

Subtitle Format Sindebele (Ndebele)

Chapter 1 Introduction

Isikhathi sokukhula kweseli libe Yizayigothi eyenza umuntu kuba li 100 leengidigidi zamaseli akhulileko futhi lokho kuyinto emangazako ekudalweni koke okukhona.

Abacwaningi kwanjesi bayazi ukuthi okwenziwa mzimba okhulileko malanga wonke kuyakhela ngesikhathi sokukhulelwa - ngaphambili kwesikhathi sokubeletha.

Isikhathi sokukhula ngemva kokubeletha saziwa khulu njengesikhathi sokulungiselela ngesikhathi ukukhula komuntu kuba nokwakheka okuhlukene, befuthi kuzibandula ngelwazi elinengi elifunakalela ukuphila ngemva kokubelethwa.

Chapter 2 Terminology

Ukukhulelwa ebantwini kuvamise Ukuthahta okungasenani iimveke ezi-38 njengoba kumediwe kusukela ngesikhathi sokukhulelwa, noma sokumumatha, kufikela abeletha.

Ekuthomeni kwemveke eziyi-8 zokuthoma ngemva kokumumatha umuntu okhula ngaphakathi kuthiwa yi-embryo, okusho ukuthi "khula ngaphakathi." Isikhathesi, esibizwa ngokuthi Yi-embryonic period, sibonakala ngokukwakheka kweenkambiso zomzimba ezinkulu.

Ekusukeni kokuphela kweemveke ezi-8 Bekufike ukupheleni kokukhulelwa, "umuntu okhulako ubizwa nge fetus," okutjho ukuthi "mntwana ongakabelethwa." Ngesikhathesi, esibizwa nge-fetal period, umzimba uyakhula begodu amalunga wawo athome ukusebenza.

linkhathi ezibizwa nge-embryonic ne-fetal kulelihlelo, zitjho isikhathi sokusukela kokumumatha (fertilization).

The Embryonic Period (The First 8 Weeks)

Embryonic Development: The First 4 Weeks

Chapter 3 Fertilization

Ngokwebhayiloji, "ukukhula komuntu kuthoma ngesikhathi sokumumatha"(fertilization) ngesikhathi umama nobaba bahlanganisa ama-chromosomes wabo angu 23 ngamunye ngokuhlanganisa amaseli wabo wokubeletha.

Iseli lokubeletha likamama livamise ukubizwa ngokuthi "liqanda"(egg) kodwa igama ekungilo yi-oocyte.

Iseli lendoda lokubeletha laziwa ngama "sperm" kodwa igama elikhethekileko yi-spermatozoon.

Ukulandela ukuphuma kwe-oocyte kuqanda lomuntu wesifazane kukambiso ebizwa nge-ovulation, i-oocyte ne-spermatozoon ziyahlangana ngaphakathi kwethumbu lesizalo, avamise ukubizwa ngama Fallopian tubes.

Amathumbu wesizalo ahlanganisa amaqanda womuntu wesifazane nesibeletso.

Isiphumelo salokho liseli elibizwa nge-zygote, okutjho "okuhlangeneko."

Chapter 4 DNA, Cell Division, and Early Pregnancy Factor (EPF)

DNA

Ama-chromosomes angu 46 we-zygote's ajamele umphumela wokuthoma ohlukileko wokwakheka okupheleleko komuntu oyedwa. Ukuhleleka lokho kuhlala ngeencyana ezincane ezihlangeneko zamamolekyula ezibizwa nge-DNA. Zinemilayezo yokukhula komzimba woke.

Amamolekyuli we-DNA afana Nesikhwelo esihlangeneko esibizwa nge-double helix. Amafindo wesikhwelo enziwe mamolekyuli amabili, noma ukwakheka okubizwa nge-guanine, cytosine, adenine, ne thymine.

I-Guanine ihlangana kwaphela ne-cytosine, begodu i-adenine yona ihlangane ne-thymine. Iseli elinye nelinye lomuntu pheze libe neengidigidi ezi-3 zemakhiwo engamibili le.

I-DNA yeseli ngalinye inemininingwane eminengi kangokuthi nakube beyijanyiselwe ngamagama abhaliweko, ngokubhala igama ngalinye lesakhiwo ngasinye kungadinga amaphepha abhaliweko angaphezulu kwesigidigidi esi 1.5!

Nakube ama-DNA ahlanganisiwe, aba liseli linye lomuntu elingange $3 \frac{1}{3}$ yeenyawo noma imitha eli-1.

Nakube besingathathulula i-DNA ngaphakathi kwamaseleli womuntu omdala amabhiliyoni amantathu ali-100, ingathabuluka ibe ngaphezulu kwamamayela amabhiliyoni ama-63. Ubude lobu bungangokusuka emhlabeni ukuya elangeni ukubuya kuze kube ziinkhathi ezi-340.

Cell Division

Isikhathi esinganga ma-24 ukuya kuma-30 wamahora ngaphambili kokumumatha (fertilization), i-zygote yakha beyiqede ukuhlukana kweseli lokuthoma. Ngenkambiso ye-mitosis, iseli ngalinye lihlukana kabili, nalikabili lihlukane kane, njalo njalo.

Early Pregnancy Factor (EPF)

Kusese mahora ama 24 ukuya kwama 48 ngemva kokuthoma ukumumatha (fertilization), ukukhulelwa kungafakazelwa ngokuzwa i-homoni elibizwa "ngebanga lokukhulelwa lokuthoma" ngaphakathi kweengazi zikamama.

Chapter 5 Early Stages (Morula and Blastocyst) and Stem Cells

Emva kwamalanga ama 3 ukuya kwama 4 ngemva kokumumatha, amaseli ahlukana we-embryo aba yindilinga begodu i-embryo ibizwa ngokuthi yi-morula.

Ukusukela emalangenini ama 4 ukuya kwa 5, Kuba nesikhala hlangana nebhola yamaseli begodu i-embryo leyo ibizwa nge-blastocyst.

Amaseli angaphakathi kwe-blastocyst abizwa ngobunengi bamaseli wangaphakathi begodu akha ihloko, umzimba, nokunye ukwakheka okubalulekile kumuntu okhulako.

Amaseli angaphakathi kobunengi bamaseli wangaphakathi, abizwa ngama embryonic stem cells ngob akwazi ukwenza elinye nelinye lehlobo yamaseli angaphezulu kwa 200, asemzimbeni womuntu.

Chapter 6 1 to 1½ Weeks: Implantation and Human Chorionic Gonadotropin (hCG)

Ngemva kokuya phasi nethumbu lesizalo(uterine tube), i-embryo yokuthoma ihlala ngaphakathi komthangala wesizalo sikamama. Ikambiso le,ebizwa ngokutshaleka yenzeka ngemva kwamalanga asi 6 iphele emva kwamalanga ali 10 ukuya ku 12 ngemva kokumumatha(fertilization).

Amaseli we-embryo ekhulako athoma ukuba namahomoni ebizwa nge human chorionic gonadotropin, noma hCG, okuyinto eveza kuhlololwa ukukhulelwa.

HCG ithumela amahomoni wesifazane ukuthi athikameze ukuya enyangeni okujayelekile (normal menstrual cycle), avumele ukukhulelwa kuye phambili.

Chapter 7 The Placenta and Umbilical Cord

Ngemva kokutshaleka (implantation), amaseli elipheleleni kwe blastocyst akha incenye yomakhiwo ebizwa nge placenta, ohlukanisa okukamama nekwe-embryo.

Iplasenta ilihlangothi likamama eliletha umoya, okondlako, amahomoni, nemithi kumuntu okhulako; asusa koke okungafunekiko; befuthi avikele igazi likamama lingahlangani nele-embryo ne-fetus.

Iplasenta nayo yenza amahomoni befuthi ibambha ukushisa komzimba we-embryonic ne-fetus ube ngaphezudlwana kokushisa komzimba kamama.

Iplasenta ikhulumisana nomuntu osakhulako ngemithambo yenkaba umbilical cord).

Ubukghoni beplasenta bokusekela ubuphilo budlula beendawo zeembhedlela zokunakekela abagula khulu ezitholakala eembhedlela zanamhlanjesi.

Chapter 8 Nutrition and Protection

Evekeni yoku 1, amaseli wamaseli wobudisi wangaphakathi enza amalayini amabili abizwa nge-hypoblast ne-epiblast.

I-hypoblast yenza 147 umgodlana womthubi, okungomunye wemakhiwo umama athumela ngawo izakhiwo zomzimbha ku-embryo nayisathomako.

Amaseli aphuma ku-epiblast akha ithambo elibizwa nge-amnion, ngaphakathi kwalo la i-embryo ngemva kwesikhathi i-fetus ikhula bekufike isikhathi sokubeletha.

Chapter 9 2 to 4 Weeks: Germ Layers and Organ Formation

Ngeemveke ezi 2 no 1/2, i-epiblast yenzekile iinyamana ezi-3 ezikhethekileko, noma imikhakha, ebizwa nge-ectoderm, endoderm, ne mesoderm.

I-Ectoderm yona ibumbha imakhiwo embalwa okufaka hlangana ingqondo, ithambo lomgogodla, imizwa, isikhumba, amazipho, neenhluthu.

I-Endoderm iveza isikhumba sokuphefumula neziko lokugaya ukudla, begodu yakha iincenye zamalunga njengesibindi namanyaka (pancreas).

I-Mesoderm yakha ihliziyo, iziso, amathambo, namathambo amade (cartilage), imisipha, amaseli weengazi, neminye imakhiwo.

Emvekeni ezi 3 ingqondo iyahlukana ngeencenye ezi 3 ezisisekelo ezibizwa ngengqondo yangaphambili (forebrain), ephakathi (midbrain), neyangemuva (hindbrain).

Ukukhula kwehlelo lokuphefumula nelokugaya ukudla nakho kusendleleni.

Njengoba amaseli weengazi athoma ukuvela ngaphakathi komgodlana womthubi, imithambo yeengazi yakheka ku-embryo yoke, begodu nehliziyo elitjhubhu ithoma ukuvela.

Kungasi kudala, ihliziyo ekhula njalo iyabhincana ngokwayo njengendlwana eyodwa ithome ukuvela.

Ihliziyo ithoma ukuphefumula Emva kweemveke ezi-3 nelanga elilodwa ngemva kokumumatha (fertilization).

Ihlelo lokukhambisa iingazi lihlelo lokuthoma lomzimbha, noma isichema samalunga ahlobeneko, ukufikela isikhathi sokusebenza.

Chapter 10 3 to 4 Weeks: The Folding of the Embryo

Phakathi kweemveke ezi 3 ne 4, ihlelo lomzimbha liyathoma njengoba ingqondo, ithambo lomgogodla, nehliziyo ye-embryo zibonakala lula eceleni komgodla womthubi(yolk sac).

Ukukhula okuya phambili kubangela ukugoqana kwe-embryo ethabaleleko. Ihlelweli lifaka hlanguana incenye yomgodla womthubi endleleni yehlelo lokuphefumula, yakhe isifuba nesikhala samathumbu womuntu okhulako.

Embryonic Development: 4 to 6 Weeks

Chapter 11 4 Weeks: Amniotic Fluid

EMVA KWEEMVEKE EZI-4 I-amnion esele ibonakala kuhle izungeze i-embryo ngaphakathi komgodlana ogcwele amanzi. Amanzana la, abizwa nge-amniotic fluid, avikela i-embryo bona ingalimali.

Chapter 12 The Heart in Action

Ihliziyo ibetha bekube ka 113 ngomzuzu.

Qaphelisisa bona ihliziyo iguka njani umbala njengoba iingazi zingena ziphuma eendlwaneni zazo lokha ibetha.

Ihliziyo izokubetha qishe kube ziingidi ezingu 54 ngaphambili kokubelethwa futhi ngaphezulu kwamabhiliyoni angu 3.2 nakube ukuphila kuminyaka engu 80.

Chapter 13 Brain Growth

Ukukhula kwehliziyo kuboniswa kushintsha kwesimo sengqondo yangaphambili, ephakathi, nengemuva.

Chapter 14 Limb Buds

Ukukhula kwezitho zangaphezulu nangaphasi kuthoma ngokuvela kweemponjwana eemvekeni e-4.

Isikhumba sibonisa ngale ngalesisikhathi ngombana sikhulu ngeseli linye kwaphela.

Njengoba isikhumba sikhula, angeze sisabonisa ngale kwaso, okusho ukuthi sozokwazi ukubona amalungu wangaphakathi akhula isikhathini esingangenyanga.

Chapter 15 5 Weeks: Cerebral Hemispheres

Phakathi kweemveke ezi 4 ne 5, ingqondo ikhula iye phambili futhi ihlukane ngeencenye ezi 5 ezihlukileko.

Ikhanda lingange 1/3 ye-embryo.

Indawo yobucopho iyavela, ithome kancani ibe yindawo ekulu yengqondo.

Izenzo eziphethwe yindawo yobucopho zifaka hlangana ukucabanga, ukufunda, ukukhumbula, inkulumo, ukubona, ukuzwa, ukuzikhambela, nokusombulula iinkinga.

Chapter 16 Major Airways

Kuhlelo lokuphefumula, incenye yakwesokudla neyakwesobuncele yokuphefumula sezikhona ngokukhamba kwesikhathi zizokuhlangana nephayiphu lomoya, namaphaphu.

Chapter 17 Liver and Kidneys

Qaphela isibindi esikhulu Sigcwalisa amathumbu eduze kwehlizo ebethako.

Iziso zivela eemvekeni ezi 5.

Chapter 18 Yolk Sac and Germ Cells

Umgodlana womthubi (yolk sac) unezitho zokubeletha ezibizwa ngama germ cells. EMVA KWEEMVEKE EZI-5 Amaseli la (germ cells) ayathutha aye kuncenye yezitho zokubeletha eduze neziso.

Chapter 19 Hand Plates and Cartilage

Futhi ngeemveke ezi-5, i-embryo iveza izandlana, nokwakheka kwamathambo kuyathoma nge 5 1/2 yeemveke.

La sibona isandlana sesinceleni nesihlakaleni eemvelemo ezi-5 namalanga asi 6.

Embryonic Development: 6 to 8 Weeks

Chapter 20 6 Weeks: Motion and Sensation

Eemvekeni ezi 6 indawo yobucopho iyakhula (cerebral hemispheres) masinyana ukudlula ezinye iindawo zengqondo.

I-embryo ithoma ukusikinyeka Ngeenkhati ezingafaniko beyizelule. Ukusikinyeka okunje kuyadingeka ukuthuthukisa ukwakheka kwamanyuroni.

Ukuthinta umlomo kubangela i-embryo ibuyisele ihloko yayo emuva.

Chapter 21 The External Ear and Blood Cell Formation

Indlebe yangaphandle ithoma ukwakheka.

EEMVEKENI EZI-6, ukwakheka kwamaseli weengazi kuyathoma esibindini la ama-lymphocytes sele akhona. Leli hlobo lamaseli weengazi elimhlophe liyincenye esisekelo lehlelo lokuvikela elisakhulako.

Chapter 22 The Diaphragm and Intestines

I-diaphragm, nemisipha esisekelo esebenziswa ekuphefumuleni, ithomeka ukwakheka ngeemveke ezi-6.

Incenye yamathumbu amancani lthoma ukuvela kwesikhashana ngaphakathi kwenkaba (umbilical cord). Ihlelweli, elibizwa nge-physiologic herniation, lenzela indawo amalunga amanye akhulako ngaphakathi kwamathumbu.

Chapter 23 Hand Plates and Brainwaves

Eemvekeni ezi-6 izandlana zithoma ukuthabalala.

lindledlana zengqondo zibe khona Kusese ziimveke ezi-6 namalanga ama-2.

Chapter 24 Nipple Formation

linkono zithoma ukuvela ngemahlangothini womzimbha ngaphambili kobana zifike eendaweni zazo zokugcina ngaphambili kwesifuba.

Chapter 25 Limb Development

Eemvekeni ezi 6 ne 1/2, lindololwane ziyabonakala, imino ithoma ukuhlukana, nokukhamba kwezandla kuyabonakala.

Ukubumbheka kwamathambo, Okubizwa nge-ossification, kuyathoma ngaphakathi kwe-clavicle, noma ithambo elibizwa nge-collar bone, namathambo womhlathi wangaphezulu nangaphasi.

Chapter 26 7 Weeks: Hiccups and Startle Response

Ama-hiccups athome ukubonakala ngemva kweemveke ezi-7.

Ukusikinyeka kweenyawo kuyabonakala, kunye nokuphendula.

Chapter 27 The Maturing Heart

Ihliziyo yamahlangothi ama-4 seyiphelele. Okungasenani ihliziyo kwanje lbetha ka 167 ngomzuzu.

Ukusebenza kwehliziyo (electrical activity) Kukuzinga leemveke ezi-7 ne 1/2 ibonakala ukusebenza okufana nokomuntu omdala.

Chapter 28 Ovaries and Eyes

Kwabesifazane, amaqanda ayabonakala Eemvekeni ezi-7.

Eemvekeni ezi-7 ne 1/2, ilihlo langaphakathi elinombala liyabonakala futhi iimvalo zamehlo athoma ukukhula.

Chapter 29 Fingers and Toes

Imino seyihlukene futhi amazwani ahangene ekuthomeni kwaphela.

Izandla sele zingahlangana, njengeenyawo.

Ubuhlangano bamadolo sele bukhona.

The 8-Week Embryo

Chapter 30 8 Weeks: Brain Development

Eemvekeni ezi-8 ingqondo sele ikhule khulu begodu ingangencenye yobudisi be-embryo.

Ukukhula kuya phambili Ngendlela emangazako.

Chapter 31 Right- and Left-Handedness

Eemvekeni ezi-8, amaphesenti angu-75 we-embryo abonisa ubukhulu ngakwesokudla. Okuseleko kuhlukene ngokulinganako phakathi kokukhulu ngokwesobuncele nokungakhethi. Lokhu kubonisa ngesikhathi kusothoma ukusebenzisa sokudla noma sesincele.

Chapter 32 Rolling Over

Iincwadi zobodokotela babentwana zihlathulula ikhono loku "phenduka " libonakala kusukela eemvekeni ezi-10 ukuya 20 ngemva kokubelethwa. Kodwana ukuhlanganokho, kubonakala masinyana kusimo esinganabudisi kumgodla ozele amanzi obizwa nge (amniotic sac). Kwaphela ukuswela amandla okudingekako ukuhlula ubudisi obukhudlwana ngaphandle kwesizalo kuvikela abasanda kubelethwa bangaphenduki.

I-embryo iyakhula khudlwana ngalesi isikhathi.

Ukusikinyeka kungaba msinyana namkha kabuthaka, kunye namkha kunengi, ngeenkxhathi ezihlukileko namkha ngokuzilula.

Ukuphendula ihloko, ukulula intamo, nokuthuntana kwesandla nobuso kwenzakala kanengi.

Ukuthinta i-embryo kuletha ukubaleka, ukusikinyeka kwemihlathi, kokubamba, nokukhomba kweminwe.

Chapter 33 Eyelid Fusion

Phakathi kweemveke ezi-7 na 8, iimvalo zamehlo ziyakhula emehlweni zihlangane.

Chapter 34 "Breathing" Motion and Urination

Nanoma kunganamoya kusibeletho, i-embryo ibonisa ukuphefumula okungathikamezekiko emvekeni ezi-8.

Ngalesi isikhathi, iziso sekhipha umchamo ophumela ngaphakathi kwe-amniotic fluid.

Kuma-embryos wabesilisa, Amaqanda akhulako athoma ukukhipha i-testosterone.

Chapter 35 The Limbs and Skin

Amathambo, iindawo zokuhlangana, imisipha, imizwa, nemithambo yeengazi yezitho zomzimba zifana khulu nalezo zabantu abadala.

Eemvekeni ezi-8 Isikhumba sangaphandle, siba kanengi, ungasakwazi ukubona ngale.

Amashiya ayakhula afane nezinwele zivela eduze komlomo.

Chapter 36 Summary of the First 8 Weeks

limveke ezisishiyagalombili zibonisa ukuphela kwesikhathi se-embryonic.

Ngalesi isikhathi, i-embryo yomuntu ikhule ukusukela kuseli linye yaqishe yaba maseli ayi 1 billion akha imakhiwo engaphezulu kwe 4,000 eyahlukileko (anatomic structures).

I-embryo manje inangaphezulu kwe 90% yemakhiwo etholakala kwabadala.

The Fetal Period (8 Weeks through Birth)

Chapter 37 9 Weeks: Swallows, Sighs, and Stretches

Isikhathi se-fetus siqhubeka bekufike isikhathi sokubeletha.

By 9 weeks, ukukhotha iminwe kuyaqala begodu i-fetus ingagwinya i-amniotic fluid.

I-fetus seyiyakwazi nokubamba into ethile, ise ihloko phambili nemuva, ivule beyivale umhlathi, isikinye ilimi, ikhokhe umoya, izelule.

Imizwa esebusweni, ezandleni, nasezithendeni zeenyawo ingezwa ukuthintwa okuncani.

"Ekuphenduleni ukuthintwa okuncani esithendeni senyawo," i-fetus izakugoba inyonga nedolo begodu ingasonga izwani.

Izivalo zamehlo zivalekile.

Emphinjeni, kuthoma ukuvela izitho zephimbo kubonakalisa ukuthoma kokukhambisana kwephimbo.

Kuma-fetuses wabesifazane, isizalo siyabonakala namaseli angakakhulu wokubeletha, abizwa nge-oogonia, athoma ukuphindaphindana ngaphakathi kwesizalo.

Izitho zangasese sithoma ukubonakala njengezowesifazane noma wesilisa.

Chapter 38 10 Weeks: Rolls Eyes and Yawns, Fingernails & Fingerprints

Ukukhula phakathi kweemveke ezi 9 nezi 10 ukukhula komzimba ngaphezulu kwe-75%.

Eemvekeni ezi 10, ukusebenza kwelihlo elingaphezulu libangela ukuphenduka kwamehlo.

I-fetus iyazamula ivamise ukuvula nokuvala umlomo.

Ama-fetuses amanengi amunya umuno.

Iincenye zamathumbu amancani ngaphakathi kwekaba abuyela ngaphakathi komgodi ongaphakathi kwamathumbu.

Ukuqinina kwamathambo kuyathoma emathanjeni amanengi.

Amazipho weminwe namazwani athoma ukukhula.

Imigadangiso yemino ehlukeleko iyavela iimveke ezi-10 emva kokumumatha (fertilization.) Ikambiso le ingasetshenziswa Ukuhlukanisa epilweni yoke.

Chapter 39 11 Weeks: Absorbs Glucose and Water

Eemvekeni ezi-11 ipumulo nezindebe zomlomo ziphelile ukwenzeka. Njengesinye nesinye isitho somzimba, isimo sazo singashintsha kwelinye nelinye izinga lepilo yokukhula komuntu.

Amathumbu amancani athoma Ukwamukela amanzi ne-glucose edliwe yi-fetus.

Nanoma ubulili bakheka ekumumatheni, izitho zobulili ziyabonakala kwanjesi ngokuthi ngezesilisa noma zesifazane.

Chapter 40 3 to 4 Months (12 to 16 Weeks): Taste Buds, Jaw Motion, Rooting Reflex, Quickening

Phakathi kweemveke ezi-11 nezili-12, ubudisi be-fetus bayanda cishe nge 60%.

limveke eziyi 12 zikhomba ukuphela, Kweenyanga ezintathu zokukhulelwa.

Imizwa yangemlonyeni seyiphelele. Ngesikhathi sokubelethwa, Imizwa yangemlonyeni izakuba selimini kwaphela naphezulu ngaphakathi emlonyeni.

Ukukhipha okungafuneki emzimbeni Kuthoma kusese ziimveke ezi 12 kuqhubeke iimveke ezi-6.

Okukhishwa kokucala ku-fetus kubizwa nge-meconium. Kunama enzymes wokugaya (digestive enzymes), amaphrotheni, namaseli afileko akhishwa lihlelo lokugaya.

Emva kwemveke ezi-12, Izitho zangaphezulu sezifike ebudeni obungalingana nezomzimba. Izitho zomzimba zangaphasi ziyakhula sezizokufikela ubude bazo.

Ngaphandle komgogodla Naphezulu kwehloko, umzimba woke we-fetus uyaphendula nawuthintwa kancani.

ukuhluka kokukhula okuya ngobulili kubonakala kokuthoma. Isibonelo, ama-fetus wesifazane abonisa ukusikinyeka komhlathi kanengi ukudlula wesilisa.

Nawufanisa nokubalekisa umzimba kwangaphambili, ukujabula komlomo kuyenzeka ukuphendukela kilokho okujabulisa umlomo nokuvuleka komlomo. Ukuphendulokhu kubizwa nge "rooting reflex" begodu kuyaqhubeka ngemva kokubelethwa, kunceda ingane ifumane ibele likamama ngesikhathi sokuncela.

Ubuso buyaqhubeka nokukhula lokha amafutha athoma ukugcwala imihlathi nokukhula kwamazinyo kuthoma.

Eemvekeni ezi-15, amaseli akha iingazi ayafika(blood-forming stem cells) aziphindaphinde ngaphakathi kwethambo. Amaseli weengazi amanengi enzakala la.

Nanoma ukukhambakhamba kuthoma Ku-embryo eneemveke ezi-6, okhulelweko uthoma ezwe ukukhambakhamba kwe-fetus hlangana kweemveke ezi-14 nezi-18. Ngokwesiko isenzeko lesi Sibizwa ukwenza msinyana (quickening).

Chapter 41 4 to 5 Months (16 to 20 Weeks): Stress Response, Vernix Caseosa, Circadian Rhythms

Eemvekeni ezi-16, ikambiso yokufakwa kwenalithi ngemathunjini we-fetus aletha ukukhathazeka kwamahomoni kukhiphe i-noradrenaline, noma i-norepinephrine, iyithululele ngaphakathi kweengazi. Abentwana abancani nabantu abadala babonisa ipendulo efanako kukambiso yokungenelelwa.

Kuhlelo lokuphefumula, isitho esibizwa nge-bronchial tree sesicishe siphelele.

Into emhlophe evikelako, ebizwa nge-vernix caseosa, seyivale i-fetus. I-Vernix ivikela isikhumba ukuthi singahlushwa zinkathazo ze-amniotic fluid.

Ukusukela eemvekeni ezi-19 ukusikinyeka kwe-fetus, ukuphefumula kwayo, nokubetha kwehliziyo kuthoma ukulandela ihlelo elithileko elibizwa nge-circadian rhythms.

Chapter 42 5 to 6 Months (20 to 24 Weeks): Responds to Sound; Hair and Skin; Age of Viability

EEMVEKENI EZI-20 indlebe yangaphakathi (cochlea), okusisitho sokuzwa, seyikhule njengeyomuntu omdala ngaphakathi kwendlebe ekhulileko ngaphakathi. Kusukela nje ukuya phambalil, i-fetus izakuphendula imidumo eminengi ngokuya kwesikhathi.

Izinwele zicala ukukhula ekhanda.

Koke ukwakheka kwesikhumba kukhona, kufake hlangana imbotshana yezinwele, nama-glands.

Eemvekeni ezi-21 ukuya kwe-22 Ngemva kokumumatha, amaphaphu athola ithuba lokuphefumula umoya. Lokhu kwaziwa ngokwazi ukuphila (viability) ngoba ukuphila ngaphandle kwesibeletso kuyazakala kwamanye ama-fetuses. Ukuphumelela okunengi Kwemithi elaphako kwenza kwenzakale ukuqhubela phambili impilo kulabo abazalwe ngaphambili kwesikhathi.

Chapter 43 6 to 7 Months (24 to 28 Weeks): Blink-Startle; Pupils Respond to Light; Smell and Taste

EEMVEKENI EZI-24 Isivalo selihlo siyavuleka futhi begodu i-fetus ibonisa ukuphendula ngokuphazamisa ilihlo. Lokhu kuphendula kumidumo yamsinyana, ephezulu kwenzakala msinyana ku-fetus yesifazane.

Imibiko embalwa ibonisa ukuthi ukuvezwa kumdumo ophozulu kungathikameza kabi ipilo ye-fetus. Imiphumela yamsinyana ukubetha kwehliziyo msinyana okuqhubekela phambili, ukugwinya kwe-fetus okungaphezulu, nokuziphatha okushintshako. Okungenzeka esikhathini esizako kufaka hlangana ukulahlekelwa kukuzwa.

Izinga lokuphefumula lingaphakama libe kufikela ama-44 ukukhipha nokufaka umoya ngeminithi.

Ngesikhathi senyanga yesithathu yokukhulelwa, ukukhula kwengqondo kudla amandla angaphezulu kwe-50% asetjenziswa yi-fetus. Ubudisi bengqondo bukhula phakathi Kuka 400 no 500%.

Kuveke yama-26 amehlo athoma ukuveza iinyembezi.

Ameblo athoma ukungafuni ukuthintana Nomkhanyo kusukela kumveke ezi-27. Ukungafuni ukuthintana nelanga Kuthikameza inani lomkhanyo kufikele kundawo yelihlo ethatha umfanekiso ubuphilo boke.

Zoke iindawo ekufunakala zisebenze ngokufukelela ziyasebenza. Izifundo ngabentwana ababelethwa kungakafiki isikhathi babonisa ikghono lokunukelela kusese ziimveke ezi-26 ngemva kokumumatha.

Ukufaka into enoshukela ngaphakathi kwe-amniotic fluid kungezelela ukugwinya kwe-fetus. Ngakwelinye ihlangothi, ukugwinya Kwe-fetus okwehlileko kulandela ukuba khona kwento enganambitheki. Ukushintsha ubuso kuvamisile.

Ngokwenza okufana nokusikinya imilenze okufana nokukhamba, i-fetus iyaphenduphenduka.

I-fetus ibonakala ingakashwabani kakhulu njengoba amafutha amanye ayangezelela abuya ngaphasi kwesikhumba. Amafutha adlala indima ekulu ekubambeni umfuthumela womzimba nokonga amandla emva kokubeletha.

Chapter 44 7 to 8 Months (28 to 32 Weeks): Sound Discrimination, Behavioral States

Emva kweemveke ezi-28 i-fetus iyakwazi ukuhlukhanisa phakathi kwemidumo ephozulu nephasi.

Emva kweemveke ezi-30, ukusikinyeka kokuphefumula kuvamile begodu kwenzeka kusukela ku-30 ukuya ku-40% wesikhathi kwenye nenye i-fetus.

Ngesikhathi seenyanga ezi-4 zokugcina kokukhulelwa, i-fetus ibonisa iinkhathi zokwenzeka okuhlangeneko kuhlangene neenkhathi zokuphumula. Lezi iinkhathi zokuziphatha zibonisa ukukhula kokuhlangana kwendawo ephakathi yemizwa.

Chapter 45 8 to 9 Months (32 to 36 Weeks): Alveoli Formation, Firm Grasp, Taste Preferences

Qishe nakuzimveke ezi-32, i-alveoli yeqiniso, namkha amaseli wesikhwama (air "pocket" cells), athoma ukucela emaphaphini. Azokuqhubeka akhule ukufikela eminyakeni eyi-8 ngemva kokubelethwa.

Eemvekeni ezi-35 i-fetus iyakwazi ukubamba ngesandla iqinise.

Ukuvezeka kwe-fetus kuzinto ezihlukile kubanakala kuthinta ukukhetha ukunambitha ngemva kokubelethwa. Isibonelo, ama-fetus abomama bawo abadla i-anise, into enambithisa i-licorice, babonisa ukuthanda i-anise emva kokubelethwa. Abasanda kubelethwa abazange Bavezwa ku-anise abayithandi.

Chapter 46 9 Months to Birth (36 Weeks through Birth)

I-fetus ithoma umsebenzi ngokukhipha amahomoni amanengi abizwa nge-estrogen begodu ithoma ukubeletha ukusuka ku-fetus ukuya emntwaneni osanda kubelethwa.

Ukubeletha kubonakala ngokuvuleka Kwesizalo, kugcine ngokubelethwa komntwana.

Ukusuka ekumumatheni ukufikela ekubelethweni nangaphambili, ukukhula komuntu kuhlalahlalane, kuyaqhubeka. Okusanda kuvela ngalekambiso ngokuya kubonisa ukuqakatheka kokukhula kwe-fetus ipilo yoke.

Njengo ukuzwisisa kwethu ukukhula komuntu kuya phambili, njalo nekghono lethu lokuragela phambili ngezepilo - ngaphambili ngangemva kokubelethwa.