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Chapter 1 : Cryptorchidism - Wikipedia

Cryptorchidism is associated with impairment of germ cell maturation and subsequent infertility in adulthood. The present report details common scenarios of referral of men with prior history of cryptorchidism and orchidopexy seeking advice for infertility, and examines the association between.

Find articles by Prabudh Goel J. Rawat Find articles by J. Wakhlu Find articles by A. Kureel Find articles by S. This article has been cited by other articles in PMC. Abstract Cryptorchidism or undescended testis is one of the most common anomalies encountered in paediatric urology and is estimated to affect 1 to 4 per cent of full term and upto 30 per cent of preterm male neonates. The associated problems of sub-fertility or infertility and malignant transformation have been recognized for long. Fertility is impaired after both unilateral and bilateral cryptorchidism. The reported paternity rates in adults are about two-third for unilateral undescended testis and less than one-third for bilateral disease. Over the last five decades, the concepts related to cryptorchidism have changed dramatically as knowledge about its effects has accrued from research conducted worldwide. The recommended age of orchidopexy has fallen progressively from adolescence to less than one year. This review summarizes the current knowledge about the various factors affecting the fertility status in cryptorchidism with a particular focus on the derangements in the development and maturation of the germ cells and the role of surgery, hormone therapy and antioxidants in reversing these changes. Cryptorchidism, fertility, hormone therapy, orchidopexy, reactive oxygen species, undescended testis Introduction Undescended testis or cryptorchidism is a common anomaly encountered in paediatric urology and is estimated to affect 1 to 4 per cent of full term and up to 30 per cent of preterm male neonates 1. Ever since the first description of this condition by Hunter in 1 , a lot of research has been done to understand the aetiopathogenesis, morphogenesis and the molecular and hormonal milieu associated with undescended testis with an impact on the functional outcomes and prediction of complications in the long term. Cryptorchidism, especially bilateral, is associated with impaired spermatogenesis, endocrine derangements and increased risk of testicular malignancy 1. Infertility in cryptorchidism Fertility is impaired after both, unilateral or bilateral cryptorchidism. It has been quoted that around 90 per cent of patients with untreated bilateral cryptorchidism ultimately develop azoospermia as against the reported 0. The incidence of azoospermia drops to 32 per cent in medically managed patients and to 46 per cent after bilateral orchidopexy 1 , 2. The incidence of azoospermia in unilateral cryptorchidism is 13 per cent regardless of the fact as to whether the condition is corrected. About 10 per cent of infertile men from the general population will have a history of cryptorchidism and orchidopexy 1. Several old studies have documented reduced fertility in patients with cryptorchidism using various criteria such as paternity, hormones or semen data 3 , 4 , 5 , 6 , 7. Lee et al 8 , 9 have demonstrated that infertility in patients with unilateral cryptorchidism is two times more common than the general population. Furthermore, infertility amongst patients with bilateral cryptorchidism is about 3. The reduced fertility has been ascribed to the reduction in the total number of germ cells and to defective pre-pubertal germ cell maturation. There is a spectrum of testicular functions amongst these patients ranging from normal to mildly deranged spermatogenesis to severe dysfunction and the chances of fertility are related to the degree of functional derangement The testis-specific gene activation leads to a timed sequence of events which include regulated cell proliferation and differentiation of spermatogonia, meiosis and haploid differentiation or spermiogenesis Appearance of primordial germ cells PGC or gonocytes: The embryologic origin of the sperm can be traced back to the PGCs which are formed in the epiblast during the second week and move to the wall of the yolk sac. These migrate towards the developing gonads by the end of the fifth week. Mitosis continues during and after migration resulting in proliferation. PGCs or the gonocytes act as foetal reservoir of stem cells. Disappearance of gonocytes foetal stem cell pool and appearance of adult dark Ad spermatogonia adult stem cell pool: This is the first major step in the maturation of the hypothalamic-pituitary-testicular axis and is accompanied by establishment of adult stem cell pool which replaces the foetal stem cell pool and a dramatic reduction in the total number of germ cells per tubule. The Ad spermatogonia exhibit a characteristic dark electron-dense cytoplasm and a bright nuclear spot. The

transformation starts at months of age and is normally complete by six months. Almost simultaneous with the hormonal surge, there is an increase in the testicular weight and volume. The Ad spermatogonia once formed persist for the rest of life. This process is sensitive to minor genetic aberrations and to adverse environmental conditions; consequently not all neonatal gonocytes are transformed into the Ad spermatogonia and the remaining gonocytes undergo apoptosis 2. Transient appearance of primary spermatocytes and the prophase of first meiotic division: This is the second crucial step in the maturation of the hypothalamic-pituitary-testicular axis and occurs at yr of age. It is characterized by the transient onset of meiosis and histological appearance of primary spermatocytes with a transient rise in both the germ cell count and Ad spermatogonia count. Spermatogenesis arrests at this stage and resumes after the onset of puberty. Factors contributing to infertility in patients with cryptorchidism: Infertility in patients with cryptorchidism may be multifactorial and related to the aetiology of testicular maldescent, age at the time of surgical correction duration of uncorrected cryptorchidism and consequences of the treatment of cryptorchidism. It has been proposed that both the steps in the maturation of the hypothalamic-pituitary-testicular axis are abnormal in undescended testis The contralateral descended testis is also affected by similar changes but to a milder extent. Failure of transformation of gonocytes into Ad spermatogonia: Hadziselimovic and colleagues 14 have suggested that the disappearance of gonocytes foetal stem cell pool and appearance of Ad spermatogonia adult stem cell pool may be a prerequisite for the normal future spermiogenesis and fertility. This transformation is delayed and ineffective in cryptorchidism and leads to delay in the establishment of the adult stem cell pool and prolonged persistence of the foetal stem cell pool. Thereafter, the total number of germ cells falls below normal. A testicular biopsy at the time of orchidopexy in boys with cryptorchidism older than two years showed a lower germ cell count per tubule in per cent of the boys Hadziselimovic et al 16 observed that the sperm count was 7-fold higher in unilateral cryptorchid boys who had demonstrated the presence of Ad spermatogonia in the testicular biopsy as compared to the other group. In boys with bilateral cryptorchidism with Ad spermatogonia on biopsy, the median sperm count was fold higher than in boys with absence of Ad spermatogonia. A 3-fold higher sperm count was seen in patients who underwent orchidopexy before the age of three years as compared to those operated after the age of eight years The same group 17 observed that the sperm counts after puberty correlated with the number of Ad spermatogonia found at the time of orchiopexy. Analysis of testicular biopsies from 89 boys who were subjected to orchiopexy and bilateral testicular biopsy indicated three groups of high, intermediate and low risk of fertility based on the presence of Ad spermatogonia. All males in the high risk of infertility group turned out to be oligospermic mean: These patients had 25 times lower sperm counts as compared to the group with presence of Ad spermatogonia in bilateral testis Correlation between the testicular histology and post-pubertal hormonal levels confirmed a relative gonadotropin deficiency in most of these patients. Failure of hormonal surge: A surge in luteinizing hormone releasing hormone LHRH causes release of LH which stimulates the release of testosterone. The testosterone in turn, triggers the maturation of the germ cells and establishment of an adequate size of adult stem cells. Gendrel et al 18 have shown that the normal surge in LH and testosterone at months of age is significantly lower in patients remaining cryptorchid, either unilaterally or bilaterally than in infants with delayed spontaneous descent of one or both testes. Testicular biopsy specimens from cryptorchidism patients prone to develop azoospermia display histological features of impaired mini-puberty Hadziselimovic et al 17 have demonstrated the presence of Leydig cell hypoplasia in cryptorchid testes and related this finding to the deficient hormonal stimulation of the Leydig cells due to defective hypothalamic-pituitary axis. The under-stimulated Leydig cells are not capable of bringing about a testosterone surge of magnitude sufficient to effect germ cell maturation. Huff et al 13 , 20 have reported that the blunted neonatal surge of gonadotropin in cryptorchid boys trigger a cascade of hormonal and secondary histological abnormalities which are likely to result in a reduced fertility potential. However, the positive predictive value that bilateral cryptorchidism will have abnormally low testosterone level is only about 23 per cent In a study by Barthold et al 22 , no significant difference could be appreciated in the hormonal levels testosterone, estradiol, LH and FSH in both plasma and urine, inhibin B, sex hormone-binding globulin and leptin in plasma between the non-syndromic cryptorchid boys and controls during the activation of the pituitary-testicular axis in early infancy. Delayed

onset of meiosis and appearance of primary spermatocytes: This step is delayed or failed in patients with unilateral or bilateral cryptorchidism. Huff et al 13 analysed the testicular biopsies in a group of unilaterally cryptorchid boys yr old at orchidopexy. Transient onset of meiosis with appearance of primary spermatocytes was absent in all but one out of undescended testes. That patient was nine years of age and it was likely that he might have already entered puberty. There was no increase in the number of total germ cells or in the number of Ad spermatogonia suggesting reduced maturation and proliferation of germ cells. The total and differential germ cell count was significantly less in the undescended testicle as compared to the contralateral descended testis. Transient onset of meiosis with appearance of primary spermatocytes was observed in 19 per cent out of of the contralateral descended testes. Abnormal gene expression in cryptorchid boys at risk of azoospermia: The process of spermatogenesis is regulated by genes, most of which are present on autosomes. Approximately 30 genes involved in spermatogenesis are present on the Y chromosome and are exclusively involved with reproduction The early growth response gene EGR4 which regulates the critical genes involved in early stages of meiosis and regulation of LH secretion has been demonstrated to be virtually silent in the high risk for azoospermia HAZR group Similarly, EGR1 which is preferentially expressed in the Leydig cells of the testes is also insignificantly expressed in cryptorchidism. EGR4 is critical as a redundant transcription factor required for sustaining male infertility when EGR1 is mutated in the germline 24 , Hadziselimovic et al 19 analyzed whole genome expression signatures of undescended testes at risk of developing azoospermia. They identified genes which were not expressed or under-expressed in the azoospermia risk group as compared to the control group or patients with low risk for azoospermia LAZR. The molecular events initiating the testicular expression programme at the onset of puberty and maintaining it during adulthood occur very early in the pre-puberty testis and were impaired in the HAZR group lacking Ad spermatogonia. Hadziselimovic et al 26 further observed that uncontrolled transposon activity inducing genomic instability and germ cell death may be responsible for the decreased germ cell count in cryptorchid boys with impaired mini-puberty. They observed that five of eight genes that are important for transposon silencing were not expressed in the high azoospermia risk group of cryptorchid boys but were expressed in the low azoospermia risk and control groups. Surgery for undescended testes: Implications for fertility The mode of treatment for undescended testes has been debated for long. Recently, a group of specialists in various related disciplines from the Nordic countries summarized the available information from literature, dwelled upon the pros and cons of different treatment modalities and framed a consensus on the management of undescended testes 27 , The group suggested that efforts should be made to ensure descent of the retained testis. The small difference of degree centigrade between the abdomen and the scrotum is detrimental to normal spermatogenesis 7 and fertility in the long-term. Studies have revealed that the placement of the testis into the scrotum before the age of 13 yr reduces the risk of malignancy significantly The increased susceptibility of an undescended testis to testicular torsion or injury and the associated psychological stigma are other concerns. The overall efficacy of hormonal treatment was around 20 per cent which dropped to 15 per cent in the follow up due to secondary re-ascent while the overall efficacy of primary orchidopexy was 95 per cent. Considering the poor efficacy of hormonal treatment and its potential adverse effects on spermatogenesis 33 , 34 , the group preferred orchidopexy over hormonal therapy for testicular descent. The recommended age of orchidopexy has fallen progressively over the past five decades. In , the American Academy of Pediatrics 28 recommended surgery at yr of age.

Chapter 2 : Undescended testicle: An update on fertility in cryptorchid men

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But in 2 to 4 percent of infant boys, 1 or both testes fails to move into the proper location in the scrotum, a condition called cryptorchidism. Although an undescended testis often moves into the scrotum spontaneously during infancy, sometimes the condition needs to be treated as it could interfere with normal production of sperm after puberty, causing infertility. The testes originate in the fetal abdomen, but a complex process, called testicular descent, moves them into the scrotum, where they are usually located at birth. Testicular descent begins during the 10th week, when each testis moves lower in the body to a pathway between the abdomen and scrotum, called the inguinal canal. Next, each testis moves through this canal into the scrotum, where the temperature after birth will be about 2 degrees Fahrenheit lower than in the abdomen. Sperm development, or spermatogenesis, requires this reduced temperature. If one or both testes remains in the abdomen at birth, the condition is called cryptorchidism, or cryptorchism. At puberty, if a testis is still in the abdomen, no sperm can develop in that testis, a possible cause of a low sperm count and infertility. Infertility Cryptorchidism is usually detected in a newborn boy as part of a routine examination by a doctor. If both testes remain in the abdomen and the condition is not corrected, percent of patients fail to produce sperm after puberty and are infertile and unable to father children, according to statistics published in a review of cryptorchidism published in "Swiss Medical Weekly" in August The study also stated the risk of infertility remains at about 38 percent in these men if the condition was corrected when they were children. The study also reported that, if only 1 testis was undescended at birth and the condition was successfully corrected, about 90 percent of these boys have normal fertility as adults. Treatment and Timing Most cases of cryptorchidism are diagnosed at or just after birth. The usual treatment is a corrective surgery called orchiopexy, in which the testis is manipulated into the scrotum and stitched in place through a small incision. When surgery is performed, sperm develop after puberty and their numbers may be normal, especially if only 1 tesis is involved. However, in a landmark paper published in October, in "The Lancet," researchers found that, in men whose condition was corrected but who had heat-induced damage before surgery to primitive cells destined to become sperm, the likelihood of infertility was greater than in similar subjects with normal primitive cells. Today, most doctors recommend performing corrective surgery early, usually before a baby is 1 year old and often between 3 and 6 months of age. In most cases, surgery is effective in keeping the testis in the scrotum, although doctors sometimes recommend additional treatment with pituitary or testicular hormones. Other Problems In some boys who have early corrective surgery for cryptorchidism, infertility still develops, although the reasons for this are not well understood. Some research suggests that, because the testis remains in the abdomen until surgery is performed, this may trigger an autoimmune response, leading to production of anti-sperm antibodies that could harm sperm and contribute to infertility. The presence of these antibodies was first identified in a paper published in November in "The Journal of Urology" in which researchers found anti-sperm antibodies in about 14 percent of young boys who had surgery to correct cryptorchidism up to 2 years earlier. After long-term follow-up, 4 of 29 antibody-positive subjects, or about 13 percent, still had these antibodies when they entered puberty. Subsequent studies confirmed that cryptorchidism may cause an autoimmune response against sperm, but more research is needed to determine if this related to infertility in previously cryptorchid men.

Chapter 3 : Male infertility - Symptoms and causes - Mayo Clinic

If you are searching for the book Crptorchidism, Its Impact on Male Ferility: 4th International Symposium on Pediatric Andrology, Basel, Nov, (Hormone Research, 1) by B. Herzog in pdf.

Print Overview Up to 15 percent of couples are infertile. In over a third of these couples, male infertility plays a role. Male infertility is due to low sperm production, abnormal sperm function or blockages that prevent the delivery of sperm. Illnesses, injuries, chronic health problems, lifestyle choices and other factors can play a role in causing male infertility. Not being able to conceive a child can be stressful and frustrating, but a number of male infertility treatments are available. Symptoms The main sign of male infertility is the inability to conceive a child. There may be no other obvious signs or symptoms. In some cases, however, an underlying problem such as an inherited disorder, a hormonal imbalance, dilated veins around the testicle or a condition that blocks the passage of sperm causes signs and symptoms. Although most men with male infertility do not notice symptoms other than the inability to conceive a child, signs and symptoms associated with male infertility include: Problems with sexual function â€" for example, difficulty with ejaculation or small volumes of fluid ejaculated, reduced sexual desire, or difficulty maintaining an erection erectile dysfunction Pain, swelling or a lump in the testicle area Recurrent respiratory infections Abnormal breast growth gynecomastia Decreased facial or body hair or other signs of a chromosomal or hormonal abnormality A lower than normal sperm count fewer than 15 million sperm per milliliter of semen or a total sperm count of less than 39 million per ejaculate When to see a doctor See a doctor if you have been unable to conceive a child after a year of regular, unprotected intercourse or sooner if you have any of the following: Erection or ejaculation problems, low sex drive, or other problems with sexual function Pain, discomfort, a lump or swelling in the testicle area A history of testicle, prostate or sexual problems A groin, testicle, penis or scrotum surgery Causes Male fertility is a complex process. To get your partner pregnant, the following must occur: You must produce healthy sperm. Initially, this involves the growth and formation of the male reproductive organs during puberty. At least one of your testicles must be functioning correctly, and your body must produce testosterone and other hormones to trigger and maintain sperm production. Sperm have to be carried into the semen. Once sperm are produced in the testicles, delicate tubes transport them until they mix with semen and are ejaculated out of the penis. There needs to be enough sperm in the semen. A low sperm count is fewer than 15 million sperm per milliliter of semen or fewer than 39 million per ejaculate. Sperm must be functional and able to move. Medical causes Problems with male fertility can be caused by a number of health issues and medical treatments. Some of these include: A varicocele is a swelling of the veins that drain the testicle. Although the exact reason that varicoceles cause infertility is unknown, it may be related to abnormal testicular temperature regulation. Varicoceles result in reduced quality of the sperm. Treating the varicocele can improve sperm numbers and function, and may potentially improve outcomes when using assisted reproductive techniques such as in vitro fertilization. Some infections can interfere with sperm production or sperm health or can cause scarring that blocks the passage of sperm. These include inflammation of the epididymis epididymitis or testicles orchitis and some sexually transmitted infections, including gonorrhea or HIV. Although some infections can result in permanent testicular damage, most often sperm can still be retrieved. Retrograde ejaculation occurs when semen enters the bladder during orgasm instead of emerging out the tip of the penis. Various health conditions can cause retrograde ejaculation, including diabetes, spinal injuries, medications, and surgery of the bladder, prostate or urethra. Often in these cases sperm can still be retrieved for use in assisted reproductive techniques. Antibodies that attack sperm. Anti-sperm antibodies are immune system cells that mistakenly identify sperm as harmful invaders and attempt to eliminate them. Cancers and nonmalignant tumors can affect the male reproductive organs directly, through the glands that release hormones related to reproduction, such as the pituitary gland, or through unknown causes. In some cases, surgery, radiation or chemotherapy to treat tumors can affect male fertility. In some males, during fetal development one or both testicles fail to descend from the abdomen into the sac that normally contains the testicles scrotum. Decreased fertility is more likely in men who have had this condition.

Infertility can result from disorders of the testicles themselves or an abnormality affecting other hormonal systems including the hypothalamus, pituitary, thyroid and adrenal glands. Low testosterone male hypogonadism and other hormonal problems have a number of possible underlying causes. Defects of tubules that transport sperm. Many different tubes carry sperm. They can be blocked due to various causes, including inadvertent injury from surgery, prior infections, trauma or abnormal development, such as with cystic fibrosis or similar inherited conditions. Blockage can occur at any level, including within the testicle, in the tubes that drain the testicle, in the epididymis, in the vas deferens, near the ejaculatory ducts or in the urethra. Problems with sexual intercourse. These can include trouble keeping or maintaining an erection sufficient for sex erectile dysfunction , premature ejaculation, painful intercourse, anatomical abnormalities such as having a urethral opening beneath the penis hypospadias , or psychological or relationship problems that interfere with sex. A digestive disorder caused by sensitivity to gluten, celiac disease can cause male infertility. Fertility may improve after adopting a gluten-free diet. Testosterone replacement therapy, long-term anabolic steroid use, cancer medications chemotherapy , certain antifungal medications, some ulcer drugs and certain other medications can impair sperm production and decrease male fertility. Certain surgeries may prevent you from having sperm in your ejaculate, including vasectomy, inguinal hernia repairs, scrotal or testicular surgeries, prostate surgeries, and large abdominal surgeries performed for testicular and rectal cancers, among others. In most cases, surgery can be performed to either reverse these blockage or to retrieve sperm directly from the epididymis and testicles. Environmental causes Overexposure to certain environmental elements such as heat, toxins and chemicals can reduce sperm production or sperm function. Extended exposure to benzenes, toluene, xylene, pesticides, herbicides, organic solvents, painting materials and lead may contribute to low sperm counts. Exposure to lead or other heavy metals also may cause infertility. Exposure to radiation can reduce sperm production, though it will often eventually return to normal. With high doses of radiation, sperm production can be permanently reduced. Elevated temperatures impair sperm production and function. Although studies are limited and are inconclusive, frequent use of saunas or hot tubs may temporarily impair your sperm count. Sitting for long periods, wearing tight clothing or working on a laptop computer for long stretches of time also may increase the temperature in your scrotum and may slightly reduce sperm production. Health, lifestyle and other causes Some other causes of male infertility include: Anabolic steroids taken to stimulate muscle strength and growth can cause the testicles to shrink and sperm production to decrease. Use of cocaine or marijuana may temporarily reduce the number and quality of your sperm as well. Drinking alcohol can lower testosterone levels, cause erectile dysfunction and decrease sperm production. Liver disease caused by excessive drinking also may lead to fertility problems. Secondhand smoke also may affect male fertility. Stress can interfere with certain hormones needed to produce sperm. Severe or prolonged emotional stress, including problems with fertility, can affect your sperm count. Research shows that the likelihood of pregnancy may be lower if a male partner has severe depression. In addition, depression in men may cause sexual dysfunction due to reduced libido, erectile dysfunction, or delayed or inhibited ejaculation. Obesity can impair fertility in several ways, including directly impacting sperm themselves as well as by causing hormone changes that reduce male fertility. Certain occupations including welding or those involving prolonged sitting, such as truck driving, may be associated with a risk of infertility. However, the research to support these links is mixed. Risk factors Risk factors linked to male infertility include:

Chapter 4 : The psychological impact of infertility and its treatment - Harvard Health

Cryptorchidism is the most common disorder of sexual differentiation and most common disease of an endocrine organ in man. Its prevalence in full term newborns ranges between 1 and 2%. In United States of America, approximately 27, orchidopexies are performed each year, making it one of the most.

The psychological impact of infertility and its treatment Published: May, Medical interventions may exacerbate anxiety, depression, and stress. The case of the California woman who gave birth to octuplets generated enormous media coverage and public discussion about infertility treatments. But in many ways the case is what researchers might call an "outlier" â€" one that is not typical â€" and as such it has done little to illuminate the far more common, but usually private, psychological challenges faced by the roughly 1. Experts once thought that only about half of all infertility cases had a physical origin, and that the rest were unexplained or the result of psychosomatic problems in women. But research indicates that most cases of infertility can be attributed to a physiological cause in the man or woman. About one-third of the time a physiological problem is identified in the woman, one-third of the time in the man, and about one-tenth of the time in both partners. But while the causes of infertility are overwhelmingly physiological, the resulting heartache â€" often exacerbated by the physical and emotional rigors of infertility treatment â€" may exact a huge psychological toll. Another study of American women who filled out a standard psychological questionnaire before undergoing a stress reduction program concluded that women with infertility felt as anxious or depressed as those diagnosed with cancer, hypertension, or recovering from a heart attack. When the problem is diagnosed in their wives or partners, men do not report being as distressed as the women do. But when men learn that they are the ones who are infertile, they experience the same levels of low self esteem, stigma, and depression as infertile women do. Summary points The relatively recent focus on physical causes of infertility means that its psychological impact may be overlooked. Medication side effects, money worries, and uncertain outcomes all contribute to infertility-related stress. For additional information and resources about dealing with the stress of infertility, visit www. Stress of infertility and interventions Individuals who learn they are infertile often experience the normal but nevertheless distressing emotions common to those who are grieving any significant loss â€" in this case the ability to procreate. Relationships may suffer â€" not only the primary relationship with a spouse or partner, but also those with friends and family members who may inadvertently cause pain by offering well-meaning but misguided opinions and advice. Couples dealing with infertility may avoid social interaction with friends who are pregnant and families who have children. They may struggle with anxiety-related sexual dysfunction and other marital conflicts. There are about 40 ways to treat infertility. While medical interventions offer much-needed help and hope, studies suggest that they may also add to the stress, anxiety, and grief that patients are already experiencing from infertility itself. Drugs and hormones used to treat infertility may cause a variety of psychological side effects. For example, the synthetic estrogen clomiphene citrate Clomid, Serophene , frequently prescribed because it improves ovulation and increases sperm production, may cause anxiety, sleep interruptions, mood swings, and irritability in women. These side effects have not been documented in men. Other infertility medications may cause depression, mania, irritability, and thinking problems. Patients and clinicians may find it hard to figure out which reactions are psychological and which are caused by medications â€" yet identifying causes is essential for determining next steps. Only 15 states mandate insurance coverage for infertility treatment, and the extent of coverage varies. Costs of infertility treatments are significant. For patients who do not have insurance coverage or the means to pay for treatment, not being able to obtain treatment may contribute to feeling helpless and hopeless. Even patients with insurance coverage may find that copayments or limitations on coverage mean they must pay significant amounts out of pocket. Over all, infertility interventions help about half of patients become parents, with the likelihood of success decreasing with age. Patients who learn they are to become parents may be overjoyed, but also must learn to adjust to new roles and pressures â€" both during pregnancy and after childbirth. Women who have suffered multiple miscarriages, for example, are likely to feel anxious about whether they will be able to carry

to term. Older couples may debate whether to undergo prenatal testing such as amniocentesis. Treatment failure, on the other hand, may trigger a renewed cycle of grieving and distress. The distress may be especially severe for patients living in Western developed nations such as the United States, where the cultural assumption is that anyone who works hard and is persistent will succeed in achieving a goal. Frequently one partner wants to end treatment before another, which can strain the relationship. Most patients need to gradually, and with great difficulty, make the transition from wanting biological children to accepting that they will have to pursue adoption or come to terms with being childless. Additional mental health challenges Case reports and studies using self-report measures indicate that infertile patients feel more distressed than other people. More rigorous research, however, has concluded that â€" for the most part â€" rates of anxiety, depression, and other mental health disorders are not greater than in the general population. Patients may experience serious mental health problems on a transient basis, as they deal with the emotional and physical roller coaster typical of infertility treatment. For example, one study in Taiwan used a rigorous research instrument â€" a structured diagnostic interview with a psychiatrist â€" to examine women seeking assisted reproductive treatment. The women also completed a self-report scale. Levels of anxiety and depression were higher than those found in other populations. Infertility treatment can also exacerbate existing psychiatric conditions. Infertile women with a history of depression, for example, are more likely than other infertile women to become depressed during treatment. Therapies that may help Many patients find a way to cope on their own, or they seek support from friends, family, or one of the many infertility support groups now available in person and online. But others need additional help. Referrals for short-term counseling are common â€" especially to increase coping strategies, or to provide help with making decisions as patients face many choices during treatment. Patients who experience prolonged changes in mood or sleep patterns or who have relationship problems should seek a more comprehensive evaluation, as these may be signs of anxiety or depression. Ideally, counseling should begin before patients start infertility treatment, as some studies â€" though not all â€" suggest that addressing psychological factors such as depression, anxiety, and stress may help increase the chances of giving birth to a child. Clinicians working with infertile patients can provide information on how to manage fatigue, reduce stress and anxiety, and improve communication with others. Specific types of therapy may also be useful. For example, studies have concluded that interpersonal therapy which focuses on improving relationships or resolving conflicts with others and cognitive behavioral therapy which identifies and tries to change unhealthy patterns of thought or behavior can give relief to infertile patients suffering from mild to moderate depression. Researchers have shown that psychotherapy can be helpful for anxiety or depression whether delivered individually, to couples, or in a group. Given that infertility and its treatment often cause considerable stress, experts recommend various relaxation techniques. For example, mindfulness meditation, deep breathing, guided imagery, and yoga promote stress management. See our online stress resource center for additional information and tools: Antidepressants and anti-anxiety medications are useful when symptoms are moderate to severe. Further complicating treatment, some infertility medications can interact with psychiatric drugs. For example, birth control pills prescribed to regulate ovulation may decrease blood levels of certain benzodiazepines, including lorazepam Ativan , while increasing blood levels of other medications, such as alprazolam Xanax and imipramine Tofranil. It is important for patients and clinicians to weigh all these factors when making medication decisions. Its Mental Health Professional Group focuses on the psychological and emotional aspects of infertility treatments. The National Infertility AssociationCall or visit www. Hard-won resolution Although the psychological challenges of infertility can be overwhelming, most patients ultimately reach some type of resolution â€" whether becoming parents to biological children, adopting children, or deciding to build a life without children. But this resolution is usually hard won, and patients may feel forever changed by the experience of infertility. Cousineau TM, et al. Clinical Obstetrics and Gynaecology April For more references, please see www.

Chapter 5 : Cryptorchidism and its impact on male fertility: a state of art review of current literature

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Infertility[edit] Many men who were born with undescended testes have reduced fertility , even after orchiopexy in infancy. The basis for the universal recommendation for early surgery is research showing degeneration of spermatogenic tissue and reduced spermatogonia counts after the second year of life in undescended testes. The degree to which this is prevented or improved by early orchiopexy is still uncertain. Cancer risk[edit] One of the strongest arguments for early orchiopexy is reducing the risk of testicular cancer. About 1 in men born with one or both testes undescended develops testicular cancer, roughly a 4 to 40 fold increased risk. The peak incidence occurs in the 3rd and 4th decades of life. Cancer developing in an intra-abdominal testis would be unlikely to be recognized before considerable growth and spread, and one of the advantages of orchiopexy is that a mass developing in a scrotal testis is far easier to recognize than an intra-abdominal mass. It was originally felt that orchidopexy resulted in easier detection of testis cancer but did not lower the risk of actually developing cancer. However, recent data has resulted in a paradigm shift. The New England Journal of Medicine published in that orchidopexy performed before puberty resulted in a significantly reduced risk of testicular cancer than if done after puberty. The peak age for this tumor is 15â€”45 yr. The psychological research on cryptorchism consists of only a few case reports and small studies. This research also has serious methodological problems: Existing research indicates that boys with undescended testicles do not tend to be gender-disordered, effeminate, or pre-homosexual. A disturbed self-image forms only when the family dynamics are destructive to developing male self-esteem. However, when the cryptorchism is surgically corrected a healthy masculinity becomes possible. The basic sexual normality of these boys was confirmed in a small retrospective study that tested adolescent boys several years after their condition was surgically repaired. They had developed into fairly well-adjusted teenagers without special sexual or gender problems, and with no distinctive traits of psychopathological relevance. A combination of genetics, maternal health, and other environmental factors may disrupt the hormones and physical changes that influence the development of the testicles. Severely premature infants can be born before descent of testes. Low birth weight is also a known factor. Among the more common are Down syndrome [7] Praderâ€”Willi syndrome , and Noonan syndrome. In vitro fertilization, use of cosmetics by the mother, and preeclampsia have also been recognized as risk factors for development of cryptorchidism. The researchers found a significant association between higher levels of DEHP metabolites in the pregnant mothers and several sex-related changes, including incomplete descent of the testes in their sons. Advil and paracetamol acetaminophen. According to this concept, testicular descent status is "set" during the period from 8 to 14 weeks of gestation in humans. Undescended testis is a result of disruption in androgen levels only during this programming window. The interaction of several male genes organizes this developing gonad into a testis rather than an ovary by the second month of gestation. The germ cells in this environment become fetal spermatogonia. Male external genitalia develop during the 3rd and 4th months of gestation and the fetus continues to grow, develop, and differentiate. The testes remain high in the abdomen until the 7th month of gestation, when they move from the abdomen through the inguinal canals into the two sides of the scrotum. It has been proposed that movement occurs in two phases, under control of somewhat different factors. The second phase, in which the testes move through the inguinal canal into the scrotum, is dependent on androgens most importantly testosterone. In rodents, androgens induce the genitofemoral nerve to release calcitonin gene-related peptide CGRP , which produces rhythmic contractions of the gubernaculum , a ligament which connects the testis to the scrotum, but a similar mechanism has not been demonstrated in humans. Maldevelopment of the gubernaculum, or deficiency or insensitivity to either AMH or androgen can, therefore, prevent the testes from descending into the scrotum. Some evidence suggests there may even be an additional paracrine hormone, referred to as descendin, secreted by the testes. In many infants with inguinal

testes, further descent of the testes into the scrotum occurs in the first 6 months of life. This is attributed to the postnatal surge of gonadotropins and testosterone that normally occurs between the first and fourth months of life. Spermatogenesis continues after birth. In the 3rd to 5th months of life, some of the fetal spermatogonia residing along the basement membrane become type A spermatogonia. More gradually, other fetal spermatogonia become type B spermatogonia and primary spermatocytes by the 5th year after birth. Spermatogenesis arrests at this stage until puberty. Most normal-appearing undescended testes are also normal by microscopic examination, but reduced spermatogonia can be found. The tissue in undescended testes becomes more markedly abnormal "degenerates" in microscopic appearance between 2 and 4 years after birth. There is some evidence that early orchiopexy reduces this degeneration. Pathophysiology[edit] At least one contributing mechanism for reduced spermatogenesis in cryptorchid testes is temperature. The temperature of testes in the scrotum is at least a couple of degrees cooler than in the abdomen. Animal experiments in the middle of the 20th century suggested that raising the temperature could damage fertility. Some circumstantial evidence suggests tight underwear and other practices that raise the testicular temperature for prolonged periods can be associated with lower sperm counts. Nevertheless, research in recent decades suggests that the issue of fertility is more complex than a simple matter of temperature. It seems likely that subtle or transient hormone deficiencies or other factors that lead to a lack of descent also impair the development of spermatogenic tissue. The inhibition of spermatogenesis by ordinary intra-abdominal temperature is so potent that continual suspension of normal testes tightly against the inguinal ring at the top of the scrotum by means of special "suspensory briefs" has been researched as a method of male contraception , and was referred to as "artificial cryptorchidism" by one report. Even after orchiopexy, these may also affect sperm maturation and motility at an older age. Diagnosis[edit] Scrotal ultrasonography of undescended testis. The most common diagnostic dilemma in otherwise normal boys is distinguishing a retractile testis from a testis that will not descend spontaneously into the scrotum. Retractile testes are more common than truly undescended testes and do not need to be operated on. In normal males, as the cremaster muscle relaxes or contracts, the testis moves lower or higher "retracts" in the scrotum. This cremasteric reflex is much more active in infant boys than older men. A retractile testis high in the scrotum can be difficult to distinguish from a position in the lower inguinal canal. In the minority of cases with bilaterally non-palpable testes, further testing to locate the testes, assess their function, and exclude additional problems is often useful. Scrotal ultrasound or magnetic resonance imaging performed and interpreted by a radiologist can often, but not invariably, locate the testes while confirming absence of a uterus. At ultrasound, the undescended testis usually appears small, less echogenic than the contralateral normal testis and usually located in the inguinal region. Hormone levels especially gonadotropins and AMH can help confirm that there are hormonally functional testes worth attempting to rescue, as can stimulation with a few injections of human chorionic gonadotropin to elicit a rise of the testosterone level. Occasionally these tests reveal an unsuspected and more complicated intersex condition. In the even smaller minority of cryptorchid infants who have other obvious birth defects of the genitalia, further testing is crucial and has a high likelihood of detecting an intersex condition or other anatomic anomalies. Ambiguity can indicate either impaired androgen synthesis or reduced sensitivity. An unambiguous micropenis , especially accompanied by hypoglycemia or jaundice , suggests congenital hypopituitarism. Treatment[edit] The primary management of cryptorchidism is watchful waiting , due to the high likelihood of self-resolution. Where this fails, a surgery, called orchiopexy , is effective if inguinal testes have not descended after 4â€”6 months. Surgery is often performed by a pediatric urologist or pediatric surgeon , but in many communities still by a general urologist or surgeon. When the undescended testis is in the inguinal canal, hormonal therapy is sometimes attempted and very occasionally successful. The most commonly used hormone therapy is human chorionic gonadotropin HCG. Hormone treatment does have the occasional incidental benefits of allowing confirmation of Leydig cell responsiveness proven by a rise of the testosterone by the end of the injections or inducing additional growth of a small penis via the testosterone rise. Some surgeons have reported facilitation of surgery, perhaps by enhancing the size, vascularity, or healing of the tissue. A newer hormonal intervention used in Europe is the use of GnRH analogs such as nafarelin or buserelin ; the success rates and putative mechanism of action are similar to hCG, but some surgeons have

combined the two treatments and reported higher descent rates. Limited evidence suggests that germ cell count is slightly better after hormone treatment; whether this translates into better sperm counts and fertility rates at maturity has not been established. The cost of either type of hormone treatment is less than that of surgery and the chance of complications at appropriate doses is minimal. Nevertheless, despite the potential advantages of a trial of hormonal therapy, many surgeons do not consider the success rates high enough to be worth the trouble since the surgery itself is usually simple and uncomplicated. In cases where the testes are identified preoperatively in the inguinal canal, orchiopexy is often performed as an outpatient and has a very low complication rate. An incision is made over the inguinal canal. The testis with accompanying cord structure and blood supply is exposed, partially separated from the surrounding tissues "mobilized" , and brought into the scrotum. It is sutured to the scrotal tissue or enclosed in a "subdartos pouch. In patients with intra-abdominal maldescended testis, laparoscopy is useful to see for oneself the pelvic structures, position of the testis and decide upon surgery single or staged procedure. Surgery becomes more complicated if the blood supply is not ample and elastic enough to be stretched into the scrotum. In these cases, the supply may be divided, some vessels sacrificed with expectation of adequate collateral circulation. In the worst case, the testis must be "auto-transplanted" into the scrotum, with all connecting blood vessels cut and reconnected " anastomosed ". When the testis is in the abdomen, the first stage of surgery is exploration to locate it, assess its viability, and determine the safest way to maintain or establish the blood supply. Multi-stage surgeries, or autotransplantation and anastomosis, are more often necessary in these situations. Just as often, intra-abdominal exploration discovers that the testis is non-existent "vanished" , or dysplastic and not salvageable. The principal major complication of all types of orchiopexy is a loss of the blood supply to the testis, resulting in loss of the testis due to ischemic atrophy or fibrosis. Other animals[edit] Cryptorchidism is seen in all domestic animals, most commonly in stallions, boars and canines. Evidence of this condition is more likely in companion animals and swine than ruminants. Because it is an inherited trait, affected dogs should not be bred and should be castrated. The parents should be considered carriers of the defect and a breeder should thoughtfully consider whether to breed the carrier parent or not. Littermates may be normal, carriers, or cryptorchid. Castration of the undescended teste s should be considered for cryptorchid dogs due to the high rate of testicular cancer, especially sertoli cell tumors. Surgical correction is by palpation of the retained testicle and subsequent exploration of the inguinal canal or abdomen, however, it is against AKC rules to show altered dogs, making this correction pointless for breeding stock. Surgical correction is termed orchiopexy, i. Surgical correction is an option for pet dogs that will not be used for breeding.

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Most UDT will descend spontaneously with age, but surgery is the most accepted treatment for those testes that remain undescended after 9 months of age[5,6].

But do you consider the potential dangers of the window cleaner you use? What about your shampoo? Or the container you use to take your lunch to work? Toxins are harmful to your body and can have negative effects on your fertility. Toxins can have negative health effects for everyone, but pregnant women and those trying to conceive should be especially wary. Additionally, chemicals in pregnant women can cross the placenta, in some cases harming the fetus or leading to health problems later in life. Here are six of the most common and dangerous toxins you need to know about and avoid: Exposure to BPA can lead to heart disease, diabetes, reproductive issues, and birth defects. Parabens are primarily used as preservatives in cosmetics and pharmaceuticals. Some researchers believe parabens affect estrogen production and mimic estrogen in the body. Phthalates have been found to lower sperm count and mobility, and they play a role in other hormonal and reproductive changes. Read more about phthalates 4. Dioxins are a group of hundreds of chemicals formed during industrial processes such as waste incineration, chemical and pesticide manufacturing, and pulp and paper bleaching. After being released into the air, dioxin settles on the ground, where it contaminates soil and food supplies and leads to health, reproductive, and developmental problems. These compounds are commonly used in the manufacturing of pesticides and herbicides. Dangerous heavy metals include cadmium, mercury, and lead, and they commonly pervade our food, water supply, and environment. The result of industrial processing, their pollutants come from automobiles, cigarette smoke, and heavy pesticide use. Most people are exposed to these metals on a daily basis, where they can accumulate in their organs and impair reproductive health over time. Read more about heavy metals and kids health How to Decrease Exposure Toxins are everywhere, but here are eight steps you can take to minimize your exposure to these chemicals and metals, especially while pregnant or trying to conceive: Buy organic produce , dairy products, and meats whenever possible. If you eat conventionally grown fruits and vegetables, make sure you wash and peel them first. Avoid exposure to secondhand smoke. Think about bathing in filtered water , too. Avoid eating fish contaminated with mercury. Use only nontoxic cleaning supplies. You can find these at many organic grocery stores, or you can make them yourself. Buy nontoxic personal care products. Specifically look for parabens and phthalates in these kinds of products. Read more about skin care ingredients to avoid 7. Avoid plastics containing BPA. Food and drinks are often packaged in such containers, but you should never microwave food in a plastic container. Choose nontoxic pesticides and herbicides. There are plenty of alternatives to use for your lawn and garden care needs. Being aware of toxins and knowing how to avoid them can significantly limit your risk of being affected by these threats. In addition to avoiding these toxins, many couples trying to get pregnant opt to detoxify prior to ramping up their preconception efforts in an effort to rid their bodies of environmental contaminants. There are numerous detoxification regimens or cleanses available at your local health food store, some of which are even formulated with the trying-to-conceive couple in mind. Bridget Coila Ethan Lynette is Partner for Fairhaven Health , a company that manufactures products that help couples conceive naturally and provides support to women throughout pregnancy and nursing.

Chapter 7 : 6 Environmental Toxins That Can Decrease Your Fertility

Cryptorchidism impact on paternity â€¢ Compared with controls, Reduced paternity rates have been found after treatment for bilateral (Lee et al,), but not unilateral.

Edouard Servy There are many causes of male infertility. One condition that can contribute is cryptorchidism, which means hidden testis. This is incomplete testicular descent in the scrotum and may be in one or both of the testicles. The testicles descend to a scrotal position in humans in order to help with sperm production. An undescended testicle s may lead to male infertility. A semen analysis will show absence of spermatozoa, which is called azoospermia. Absence of spermatozoa in the semen is due to problems with germ cell maturation. Facts about cryptorchidism 3 percent of full-term and 30 percent of premature infants are born with at least one undescended testicle. At least 80 percent of cryptorchid testicles descend spontaneously by the first year of life. Corrective surgery called orchidopexy must be performed before puberty, preferably during the first 3 years of life in order to minimize germ cell loss. Orchidopexy moves an undescended testicle into the scrotum. Risk of testicular cancer germ cell tumor is 4 times higher in individuals with undescended testis. MRI and CT scan can be useful for intra-abdominal testes and overall location of any undescended testicle. This can be used to help with specialized procedures when attempting to retrieve the undescended testicle or perform a biopsy of the testicle. Intra cytoplasmic sperm injection ICSI allows sperm with limited fertilizing ability to produce usable embryos. According to several recent studies, testicular sperm extraction TESE may be attempted in patients with history of cryptorchidism. The procedure is successful in 50 percent of the cases. Seo JT et al. Predictive factors of successful testicular sperm recovery in non-obstructive azoospermia patients. Androl ; 24 5 Results from TESE in azoospermia due to cryptorchidism: A ten year experience with patients. Chung Eric et al. Cryptorchidism and its impact on male infertility: Can Urol Assoc J. Causes and Treatments for Undescended Testes. Retrieved June 01, , from http: He is also trained in Internal Medicine with a focus on Endocrinology and metabolic disease. As a recipient of the highly prized Irene Bernard grant, Dr. Servy came to Augusta, Georgia, in for a research fellowship under endocrinology pioneers Dr. After completing his training, Dr. Servy established his private practice in Augusta.

Chapter 8 : Cryptorchidism & Male Infertility | Servy Massey Fertility Institute Georgia

BERKELEY, CA (theinnatdunvilla.com) - The present article details several common scenarios of referral for men with a prior history of cryptorchidism and orchidopexy seeking advice for infertility, and examines the association between cryptorchidism and male infertility. In recent times, the increase in the.

Eric Chung, Division of Urology, St. Abstract Cryptorchidism is associated with impairment of germ cell maturation and subsequent infertility in adulthood. The present report details common scenarios of referral of men with prior history of cryptorchidism and orchidopexy seeking advice for infertility, and examines the association between cyrptorchidism and male infertility. The increase in the understanding of the hormonal profiles and patho-physiological changes in germ cell maturation in cryptorchid boys may potentially change our approach and management strategies. Improvement in sperm retrieval techniques and micromanipulation techniques, such as intracytoplasmic sperm injection, has led to excellent fertilization and pregnancy outcomes of treatment cycles. Cryptorchidism or undescended testis is one of the most common congenital conditions in the pediatric population. Of these men, testicular failure or non-obstructive azoospermia is the predominant component. Testicular spermatozoa can be retrieved in some non-obstructive azoospermia men despite the absence of ejaculated spermatozoa in their semen, for instance in cryptozoospermic men intermittent detection of spermatozoa in ejaculate due to isolated foci of active spermatogenesis. Further improvement in sperm retrieval techniques has allowed infertile couples to become engaged in the discussion of their potential for fertility. Micromanipulation techniques, such as intracytoplasmic sperm injection ICSI applied to sperm and ova in vitro in-vitro fertilisation [IVF] , allow sperm with limited intrinsic fertilizing capacity to produce viable embryos. Since the introduction of microsurgical sperm retrieval and ICSI as accepted treatments for the azoospermic man, many studies have reported excellent fertilization and pregnancy outcomes of treatment cycles. The present report details 2 common scenarios of referral to our tertiary care fertility clinic of men with prior history of cryptorchidism and orchidopexy seeking advice for infertility. Case 1 A year-old man, with his healthy year-old partner, had been trying to conceive. He underwent a bilateral orchidopexy at the age of 8. While the records of intraoperative findings were not available, he recalls no postoperative complications. He reported no prior farm work or exposure to chemical pesticides, denied smoking or recreational drug use, and does not have history of sexually transmitted infections. He voids normally without history of urinary tract infection, epididymitis or other genitourinary trauma and has no erectile or ejaculatory issues. He does not take any medication or had any other surgery apart from bilateral orchidopexy. According to his parents, the operation was uneventful and he did not have any postoperative complication. He recalls normal growth and development similar to his male siblings. He has 2 older brothers; both have 2 children each. He works as a computer analyst and travels by car. He has been in a relationship with his current female partner for 3 years and they have been trying to conceive for 2 years. He has normal libido and sexual desire and is able to achieve satisfactory erection and normal ejaculate. His female partner has been assessed by the gynecologist and no contributing female factors were detected. Physical examination revealed a fit healthy man with normal secondary sexual characteristics. Testes, epididymis and vas were normal on palpation with no evidence of varicocele. Digital rectal examination was normal. Laboratory tests showed azoospermia with normal volume and pH on 2 semen-analysis samples. Both genetic karyotyping and Y-chromosome micro-deletion were also normal. The young man decided to undergo testicular biopsy for diagnostic purpose instead of sperm retrieval for ICSI preparation and cryopreservation, since the young couple is keen to avoid the high cost associated with the latter procedure. The testicular tissue appeared soft and brownish in characteristic. The tunica albuginea of testis, scrotal dartos and skin were closed in separate layers. The histopathology revealed Sertoli cell only in the testicular tissue. At a subsequent follow-up visit, the couple was counselled with regards to the operative findings and advised to consider a sperm donor or adoption. Case 2 A year-old man was referred by a gynecologist who had been assessing him and his partner for fertility. While his year-old female partner had no fertility issues, this young man was found to have severe oligospermia on the initial semen analysis. Despite strict adherence to abstinence 72 hours prior and taking over-the-counter vitamin supplements, the

repeat semen analysis confirmed isolated severe oligospermia. He reported a history of right orchidopexy when he was 6 months old. During his college years, he had been kicked on the groin area several times during sporting activities, but denied any significant pain, scrotal swelling or traumatic history requiring emergency presentation or surgical intervention. He reported normal growth and development. As a physically fit man, he did not have any other risk factor for male infertility. He has been married to his partner for 2 years and they have been trying to conceive for the past 18 months. Physical examination revealed right inguinal scar with normal testes size. He exhibited normal secondary sexual characteristics and no genital abnormalities were found. The ejaculate volume and pH were within normal range. A repeat semen analysis performed 1 month later showed 3. Further investigations, such as sexual chromosomal abnormalities and Y-chromosome micro-deletion study, were also normal. Following a discussion between the young couple and the gynaecologist, the decision was taken to undergo sperm retrieval for consideration of ICSI and IVF, rather than a testicular biopsy for histopathology. The young man was counselled with regards to the process of sperm retrieval and the costs of the procedure, sperm cryopreservation and storage. Sperm retrieval was performed under local anesthetic with percutaneous epididymal sperm aspiration PESA as the first-line evaluation. Microscopic surgical dissection of the seminiferous tubules revealed the presence of sufficient spermatozoa; the extracted sperm was prepared and cultured for 24 hours to induce sufficient sperm motility. Then the motile sperm was stored frozen in several micropipettes overnight and a sample of the frozen micropipette was thawed the following day to ensure that the sperm remained viable and motile. The confirmation of viable and motile sperm led his partner to undergo an IVF treatment cycle. Discussion Cryptorchidism is a common developmental abnormality. Testicular development requires the presence of the sex testis determining region on Y chromosome SRY gene for normal differentiation. Testicular tissue arises from differentiation of the gonadal ridge and an intact hypothalamic-pituitary-gonadal axis is a prerequisite for the testicular descent. Most palpable undescended testes are located along the inguino-scrotal region with most intra-abdominal testes found within a few centimetres of the internal ring. In general, ductal abnormalities and testicular maldevelopment are more common in boys with abdominal testes. The incidence of unilateral undescended testes is more common than bilateral undescended testes. The main reasons for the treatment of undescended testes are increase fertility and decrease the risk of testicular torsion or injury and testicular cancer, as well as psychological stigma. If so, how can we assess the fertility of cryptorchid males to better counsel them with respect to future fertility? The reduction in germ cell count starts as early as 6 months of age and is dependent on the position of the testis. In general, the higher the testicular position at the time of treatment, the fewer the number of germ cells. Spermatogenic index decreases significantly by 9 months of age and orchidopexy at or before this time may stop testicular degeneration in selected individuals and may improve their chance of preserving fertility. Non-palpable testes are associated with greater germ cell loss than clinically palpable testes. In cryptorchidism, Leydig cell atrophy is prominent in life due to insufficient gonadotropic secretion. Interestingly, the study did not find any correlation between the presence of unilateral or bilateral disease on the pathological outcomes. Previously it was thought that the contralateral descended testis in a cryptorchid male should be normal and, therefore, should provide a fertility rate close to the normal male population. Also, if the man underwent orchidopexy at an early age and the testicular biopsy demonstrated the presence of normal germ cells, the patient should technically be fertile. However, early orchidopexy does not always guarantee later fertility. During the first 3 to 6 months of age, there is a temporary surge in gonadotropins FSH, LH and inhibin B and testosterone i. Hadziselimovic contends that cryptoorchid boys who are non-responders to LHRH therapy should receive a testicular biopsy at the time of orchidopexy to document the presence of germ cell in seminiferous tubules and the total numbers of Ad spermatogonia. Studies of hormonal profiles have documented different levels of inhibin B, FSH and LH levels with the level of sperm density and spermatogenesis. The FSH levels in men are usually inversely correlated with sperm counts and indicate the integrity of seminiferous tubules, a marker of spermatogenesis. Three testicular sperm retrieval techniques have been described: Percutaneous sperm aspiration techniques are widely employed owing to their technical facility and relatively low cost. In non-obstructive azoospermia, the finding of testicular spermatozoa constitutes a key element predicting treatment success as only half of these

men will have sperm. While there are many factors that could potentially predict successful testicular sperm recovery in the non-obstructive azoospermic man, only testicular histopathology was identified as useful. The remainder of the retrieved sample can be cryopreserved for further attempts. The TESE with multiple biopsies is considered the optimal option to improve the sperm retrieval rate [SSR] given that isolated regions of spermatogenic tissue are present. In a systematic review of sperm retrieval technique for non-obstructive azoospermia, Donoso and colleagues found TESE with multiple biopsy results in a higher SSR than fine needle aspiration and MD-TESE performs better than conventional TESE only in cases of Sertoli cell only syndrome, where tubules containing active focus of spermatogenesis can be identified. At present no definitive conclusions can be drawn on the best sperm sperm retrieval technique for non-obstructive azoospermic men based on current cumulative evidence. Conclusion The complete lack of germ cells at the time of surgery is an important predictor of future fertility in the boy with cryptorchidism. The transformation of germ cells into Ad spermatogonia is crucial. Consequently, efforts should be made to preserve germ cell development apart from early orchidopexy. Testicular biopsy should be performed at the time of orchidopexy to identify those who would benefit from LHRH treatment after the procedure. The LHRH analogs induce replication and differentiation of germ cells that enhance the chance of fertility. As patients with bilateral orchidopexy have appreciably worse fertility rate than patients with unilateral orchidopexy, freezing of sperm or testicular tissue with preserved spermatogenesis may need to be considered. Footnotes This paper has been peer-reviewed. Urol Clin North Am. Hadziselimovic F, Herzog B. The importance of both and early orchidopexy and germ cell maturation for fertility. A study including data of consecutive boys who underwent testicular biopsy simultaneously with surgery for cryptorchidim. The relationship of cryptorchidism to fertility. The endocrinology of testicular descent. Cryptochidism, its impact on male fertility. Hormonal therapy of cryptorchidism. A randomised, double-blind study comparing human chorionic gonadotropin and gonadotropin-releasing hormone.

Chapter 9 : Age | Your Fertility

Introduction. Undescended testis or cryptorchidism is a common anomaly encountered in paediatric urology and is estimated to affect 1 to 4 per cent of full term and up to 30 per cent of preterm male neonates 1.