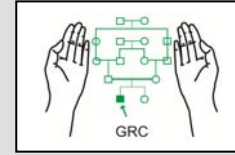


Chorionic Villus Sampling (CVS)

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Chorionic villus sampling is the standard method of fetal sampling worldwide. Chorionic villi can be aspirated either by a trans-abdominal or trans-cervical approach. The procedure is usually done after ten weeks of gestation. There appears to be no advantage in doing the procedure earlier than ten weeks. In fact CVS done before nine weeks may be associated with fetal limb reduction defects. The best time for CVS is around 11-12 weeks because the placenta is of sufficient size and it can be aspirated quite easily. There is no technical upper limit for doing CVS. Keeping in view the “fatwa” on permissibility of termination of pregnancy for the Muslim patients the upper limit of CVS may be fixed at 16 weeks.

CVS is usually done in the outdoor and no hospital admission is required. Most patients experience abdominal cramps for a day or two after the procedure that may be relieved by mild analgesics. Mild spotting may be experienced by a few that may need bed rest for a couple of days. The risk of miscarriage after chorionic villus sampling is around 1-2%. However, the risk may vary from one operator to the other.

Trans-abdominal Chorionic Villus Sampling

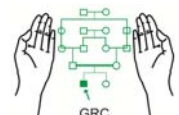
A preliminary ultrasound scan is done with 3.5MHz convex probe to determine the gestational age, number of foetuses and the placental position. The size and position of placenta is ascertained and a suitable site for introducing the needle on the anterior abdominal wall is selected. Placenta in nearly all positions except that in the very low lying posterior position can be sampled through the trans-abdominal route. Anterior placenta is best sampled when the urinary bladder is full. The fundal and the posterior placenta are easier to sample when the bladder is empty.

Ultra-sono-graphic Image of Placenta

It is important to have clear concept of what appears on the ultra-sono-graphic (USG) screen and the actual position of the placenta. The relationship is further described in Fig 1.

CVS Needle

Co-axial chorion biopsy needle set with 18G x 16.5cm outer needle and 20G x 18.5cm inner needle (Rocket, UK) gives excellent results (Fig 2). The inner needle passes freely through the outer needle when the stilet of the latter is removed. The inner needle is 2.0cm longer than the outer needle and protrudes beyond the outer needle. The outer needle has sharp piercing end whereas the inner needle has blunt rounded end. The outer surface of both of the needles has sono-lucent marks that make them shine under the ultrasound.



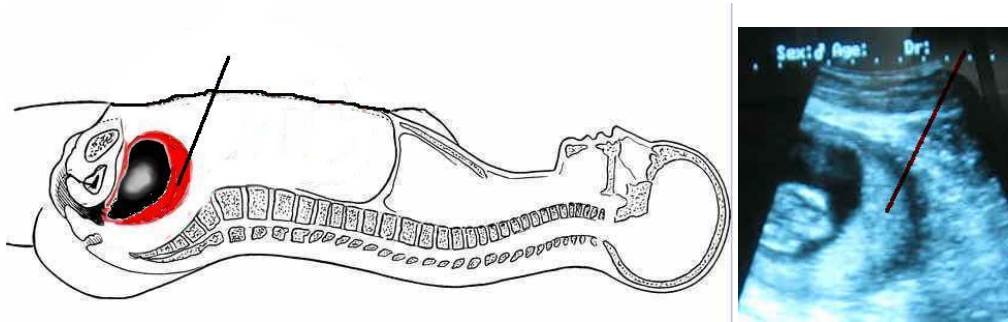


Fig 1. Co-relation between the USG image and the actual position of placenta in the pelvis. The USG image shows the uterus as if it is being seen from a side through its coronal plane. The black line represents the position of the aspiration needle.

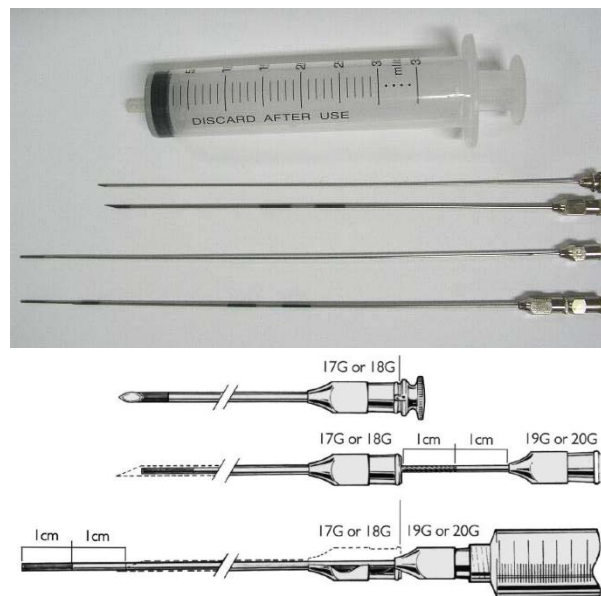
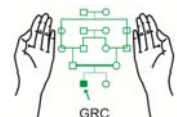


Fig 2. Chorionic villus sampling needle set (Rocket UK).

The Procedure

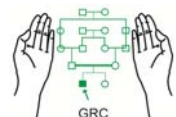
1. The right handed person stands on the left side of the patient. Based on personal preference the procedure may be done by USG guidance and CVS by the same operator or by two different operators.
2. The abdominal skin at the site of needle insertion is cleaned with an antiseptic solution. The needle track from the skin to the uterine serosa is infiltrated by about 10ml 2% Xylocain.
3. The CVS outer needle is introduced through the same puncture site. The ultrasound probe is held in the left hand and the CVS needle is advanced with the



- right hand. The needle should not be pushed blindly and its tip should remain visible on the ultrasound screen at all times. Some difficulty may be experienced in visualizing the needle when it is in the sub-cutaneous fat. The patient may experience sharp pinch when the needle pierces the uterine serosa especially when it is not well anaesthetized.
4. After passing through the uterine wall the placenta is entered with a well controlled jerky push of the needle. This helps in avoiding placental separation at the site of the needle entry. Pushing the needle slowly may cause local haematoma formation and subsequent miscarriage. Entry of the needle into placenta is typically described as feeling of “hot knife in butter”. The needle in the placenta is advanced to leave at least 2cm of the placental tissue ahead of the needle tip.
 5. A 30 ml disposable syringe is attached to the CVS inner needle and it is rinsed with a few drops of sterile normal saline. The stilet of the outer needle is removed and the inner needle is introduced through the outer needle. Lack of resistance for the tip of the inner needle is another indication that the needle is in the placenta and not in the uterine wall.
 6. Once the inner needle is in place, the plunger of the syringe is pulled back sufficiently to create suction force. This position is maintained by locking the plunger with four fingers of the hand (Fig 3).
 7. The aspiration syringe with the attached inner needle in the locked position is jiggled to and fro about 6-8 times. This causes localized disruption of the placental villi that are sucked into the syringe due to the simultaneous suction force being applied.
 8. The aspiration needle is taken out leaving the outer needle in place. The aspirated chorionic villi are flushed into a sterile Patri dish containing normal saline. Sufficient amount of greyish white placental villi confirms successful aspiration. In case of poor yield second or rarely third aspiration attempt may be made through the same outer needle left in the placenta. Failure to get adequate sample is usually caused by incorrect needle position in the placenta. In that case it is best to reposition the outer needle after replacing its stilet.
 9. Finally, the outer needle is removed and the puncture mark is sealed with a sterile elastic bandage.
 10. Post-CVS ultrasound scan is done to see the fetal wellbeing, any haematoma formation, or placental separation. The patients may be allowed to go home one hour after the procedure with an advice to take bed rest for 24 hours. Mild analgesics may be advised for pain relief.

Trans-cervical CVS

Placental aspiration can also be done through the trans-cervical route. This approach is most suitable for very low lying posterior placentas that are difficult to approach by the trans-abdominal route. The chances of introducing infection while passing through the genital tract are higher with this approach.



CVS in Twin Pregnancy

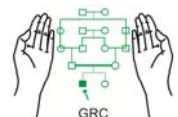
In a twin pregnancy it is important to ascertain whether the twins are mono or di-zygotic by the T or the λ sign. If mono-zygotic twins are confirmed only one sample is enough. But in case of di-zygotic twins two samples from each placenta are required. It is also important to name the twins because selective feticide might be required at a later stage. In a multiple gestation (more than two) samples from each twin may be required. This is technically demanding and should be done only by experienced operator.



Fig 3. Demonstration of locking the plunger of the aspiration syringe with four fingers while aspirating the placental villi.

Complications of CVS

1. Most patients experience abdominal cramps for a day or two following the procedures. This may be relieved by mild analgesics like paracetamol.
2. Occasional patient may complain of dizziness and fainting that might require bed rest and raising the foot end.
3. More serious complications include placental separation and localized haematoma formation. The patient may complain of spotting. Mild spotting is managed by observation and bed rest.
4. CVS may be complicated by infection introduced by unsterilized needle or rarely by trans-fixation of the large intestine. The patient develops pain and fever that may be followed by fetal loss. The patient should be hospitalized and put on antibiotics.
5. The overall rate of miscarriage following a CVS is largely operator dependent. In experienced hands it is around 1-2%. The miscarriage following CVS is usually seen within the first few days of the procedure.



Referring CVS for DNA Testing

1. CVSs done at different places may be referred to a central DNA lab. The sample can be transported in sterile normal saline with transit time up to 24 hours.
2. It is recommended to do CVS dissection under a Stereo-microscope to pick only clean fetal tissue without maternal decidua. Usually 3-4 villus fragments in 0.5ml saline are enough.

Fatwa on Termination of Pregnancy for Genetic Disorders

۱- حمل میں جب جان پڑ جائے (یعنی 120 دن بعد) تو اس وقت اس کا روحانی وجود بھی قائم ہے۔ اس لیے اس وقت تک اس کی جان بچانی چاہیے۔ اگرچہ طبی تحقیق سے پتہ چلے کہ اس کی بیماری کا علاج قابل ہی نہیں ہے، مگر یہ جان پڑنے کے بعد اس کا روحانی وجود قائم ہے۔ اس لیے اس کی جان بچانی چاہیے۔ اگرچہ طبی تحقیق سے پتہ چلے کہ اس کی بیماری کا علاج قابل ہی نہیں ہے، مگر یہ جان پڑنے کے بعد اس کا روحانی وجود قائم ہے۔ اس لیے اس کی جان بچانی چاہیے۔

۲- طبی تحقیق سے پتہ چلے کہ اس کی بیماری کا علاج قابل ہی نہیں ہے، مگر یہ جان پڑنے کے بعد اس کا روحانی وجود قائم ہے۔ اس لیے اس کی جان بچانی چاہیے۔ اگرچہ طبی تحقیق سے پتہ چلے کہ اس کی بیماری کا علاج قابل ہی نہیں ہے، مگر یہ جان پڑنے کے بعد اس کا روحانی وجود قائم ہے۔ اس لیے اس کی جان بچانی چاہیے۔

۱۹-۹-۲۰۱۵ء

دارالافتاء
دارالعلوم اسلامیہ
کراچی

۱۹-۹-۲۰۱۵ء

مفتی محمد تقی عثمانی

English Translation

1. Termination of pregnancy is absolutely prohibited after the soul is breathed into the fetus (after 120 days of gestation) even if the test shows the presence of a serious disorder. Termination after the soul is breathed into the fetus is like killing a live child. Killing a child, no matter how seriously ill that may be, is not permissible under any circumstances. Similarly, to do termination of pregnancy or to get a pregnancy terminated after the soul is breathed into the fetus is also not permissible.
2. If the test done before the soul is breathed into the fetus (before 120 days of gestation) shows that the fetus has a serious disorder and an honest physician suggests to terminate the pregnancy then the mother has the permission to get the pregnancy terminated.

Mufti Muhammad Taqi Othmani
Jamia Dar ul-Uloom, Karachi

19-9-1415 H

