TITLE: Rare presentation of Chromosome 6p anomaly: Puzzle resolved by Conventional Karyotyping

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Introduction

Due to imbalanced meiotic segregation during gametogenesis, parental balanced reciprocal translocations may cause partial aneuploidy in the progeny.

Herein, we describe the clinical and cytogenetic characteristics of a young adult female patient, who has a very rare unbalanced translocation resulting in derivative chromosome 6. The translocation is paternally inherited.

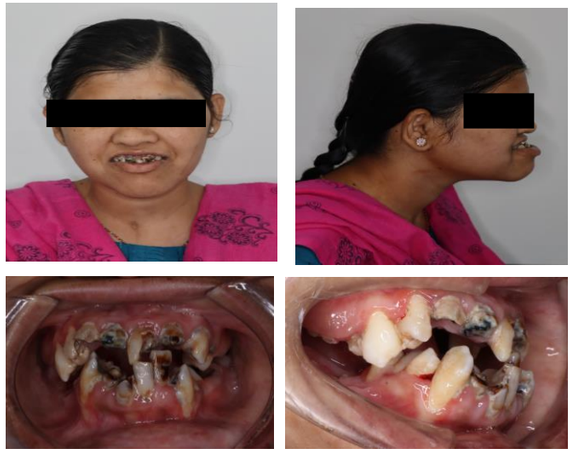
Clinical Details

24 year old female, presented to dental OPD with noticeable dental anomaly.

She also had behavioural abnormality, abnormal speech and intellectual disabilities.

She was born as full term normal vaginal delivery,.

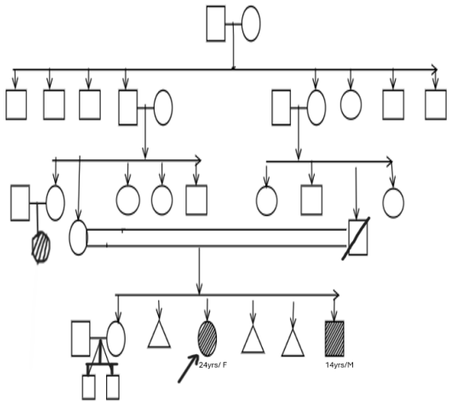
She studied in special school till 18 years. . She had menarche at 15 years and has 28 days cycle, 4-5 days flow.



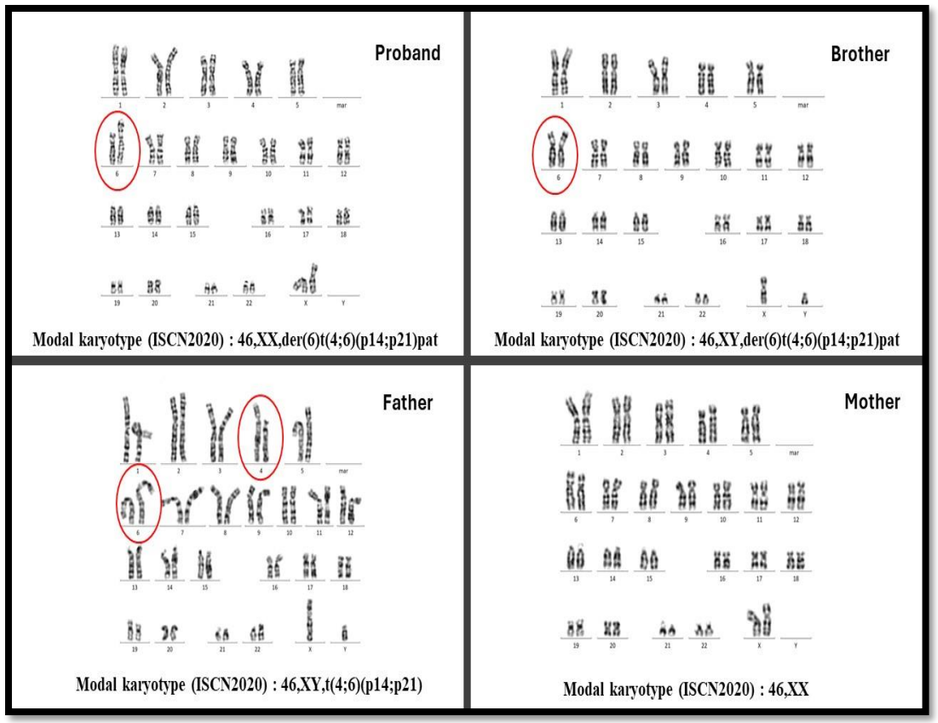
Clinical images showing craniofacial deformity.

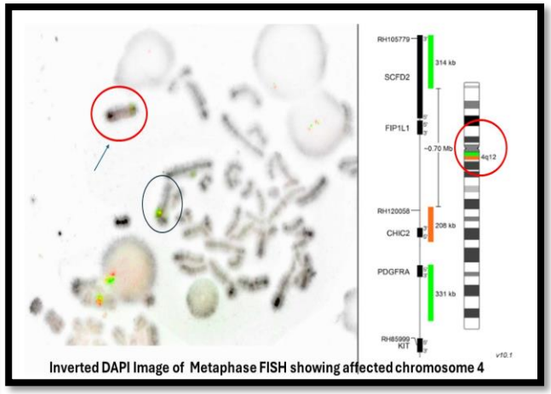
Family History

The proband's sibling was likewise discovered to have comparable karyotyping abnormalities and facial traits. To find out the proband's parents' chromosomal status, we went back and performed genetic testing on both parents.



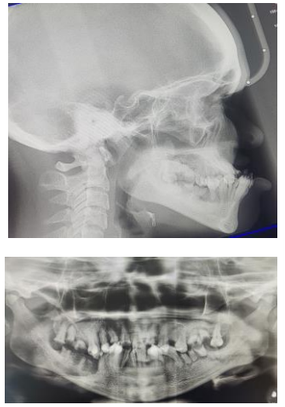
Pedigree chart of five generations.





Inverted DAPI Image of Metaphase FISH showing affected chromosome 4

INVESTIGATIONS	
Hormonal analysis	LH- 3.07mIU/mL FSH-5.25mIU/mL Prolactin-9.07ng/mL
X-ray	Right and left wrist: Normal Skull: f/s/o Prognathesia Chest: Normal Bilateral shoulder: Normal
Cardiac Evaluation	Normal



X-ray highlighting dental anamoly

Genetic counselling

Family history was obtained from each of parents, followed by pedigree analysis and genetic counselling.

The study highlights relevance of cost effective conventional cytogenetic screening and endorse the recommendation of screening of both the partners prior to conception to rule out or confirm the existence of any structural or numerical anomalies.

Conclusion

Only a very few reports of 6p anomaly resulting from balanced translocation is reported.

Balanced translocation carrier has no health or developmental concerns, although, they may sometimes experience difficulty for reproduction.

Evaluating risk variables associated with aberrant offsprings for each unique translocation occurrence is challenging.

Most abnormality fall within a 2-20% risk of having abnormal offsprings rather than a fetal demise.

Instead of resulting in death of foetus, most anomalies have a 2-20% risk of producing abnormal offspring.

Compared to a male carrier, a female carrier is more likely to transmit an imbalanced rearrangement.

ACMG recommends G banded karyotype as first line investigations for balanced translocation.

References

Narahara K et al Cleidocranial dysplasia associated with a t(6;18)(p12;q24) translocation. Am J Med Genet. 1995 Mar 13;56(1):119-20.