Ethical Discussion: Termination of Pregnancy after Prenatal Diagnosis of Cleft Lip in a Chinese Population in Hong Kong

WL LAU MBBS, FRCOG, FHKAM (O&G)
Department of Obstetrics and Gynaecology, Kwong Wah Hospital, Yaumatei, Kowloon, Hong Kong
EC HUI MD, PhD
Medical Ethics Unit, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Pokfulam, Hong Kong
FK LAI B. Sc (N), MSSc (Counselling)
TK LO MBBS, MRCOG, FHKAM (O&G)
RKH CHIN MBBS, FRCOG, FHKAM (O&G)
WC LEUNG MD, FRCOG, FHKAM (O&G), Cert RCOG (Maternal and Fetal Med)
Department of Obstetrics and Gynaecology, Kwong Wah Hospital, Yaumatei, Kowloon, Hong Kong
WY CHEUNG MBBS, FRCS, FHKAM (Surgery)
Department of Surgery, Kwong Wah Hospital, Yaumatei, Kowloon, Hong Kong

Objectives: To determine factors influencing the decision to terminate or continue a pregnancy after prenatal diagnosis of congenital cleft lip with or without cleft palate (CLP) and discuss the ethical dilemmas in prenatal counselling in terms of autonomy and social issues.
Methods: A total of 38 fetuses or newborns with congenital CLP in a regional district hospital in Hong Kong born over a 6-year period were studied. Outcomes of the 26 fetuses detected to have non-syndromic CLP (before 24 weeks) were studied with respect to demographic, social, and prenatal factors.
Results: The overall frequency of CLP was 1.11 per 1000 births. Approximately 31% (8/26) non-syndromic CLP detected prenatally (before 24 weeks) opted for termination of pregnancy. The only identifiable factor in the decision was attendance of counselling by plastic surgeons.
Conclusion: A multidisciplinary approach with contribution from a plastic surgeon in joint counselling was potentially beneficial to the patients and their families. Advances in early prenatal diagnosis of facial cleft with a significant number of women electing abortion raise serious ethical questions.
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Introduction

The prevalence of cleft lip with or without palate (CLP) in Asian babies is about 1 in 700[1]. Prenatal diagnosis is now possible with the use of high-resolution ultrasonography. The diagnosis is usually made from ultrasonography for indications other than a risk for cleft or other craniofacial anomalies. Thus, the pregnant woman and her partner are not expecting the sonographer to identify a birth defect. The initial shock caused by the discovery of CLP is followed by fear, anger, guilt, and sadness as couples grieve for not having an anticipated normal infant[2]. Thus, a multidisciplinary approach is indicated in prenatal diagnosis and counselling. Mostly, cleft lip and palate is an isolated anomaly that is considered surgical repairable. Some couples nevertheless opt for termination of pregnancy (TOP), contrary to the advice of clinicians.

In this study, we attempted to determine identifiable factors influencing the decision to terminate or continue a pregnancy after prenatal diagnosis of congenital fetal CLP. In addition, we discuss the ethical dilemma pertaining to the prenatal diagnosis and counselling regarding this anomaly, in relation to autonomy and social issues.

Methods

This retrospective study covered the 6 years from January 2003 to December 2008. The data were retrieved from the database in a Maternal Fetal Medicine Centre in a regional district hospital. The majority of our patients were Chinese. All cases of CLP detected prenatally by ultrasound examination or detected after delivery or miscarriage were

Correspondence to: Dr. WL Lau
Email: lauwl@hotmail.com

included. The cases were cross-checked with the labour ward registry. Cases referred from other hospitals for joint counselling with a plastic surgeon only were excluded.

During the study period, anomaly scans at 18 to 22 weeks were offered to high-risk pregnant women in the prenatal diagnostic clinic. The indications included advanced maternal age, a family history of congenital abnormality, and drug exposure. Routine anomaly scans were only offered to some low-risk pregnant women. In the low-risk group, if CLP was detected, referral to the prenatal diagnostic clinic was arranged for further ultrasound assessment and counselling by maternal-fetal medicine specialists.

After the diagnosis of CLP, a detailed anomaly scan was performed by maternal-fetal medicine specialists to rule out any co-existing congenital anomaly. Karyotyping by means of amniocentesis was offered to exclude chromosomal abnormalities, as the study period was prior to the era of universal Down syndrome screening. Anticipated problems and the need for a multidisciplinary CLP management approach were explained in depth. Detailed information on the problems, intervention, and surgeries (with diagrammatic illustrations) were given and discussed. Couples were given the pamphlet published by the Hong Kong Association for Cleft Lip and Palate. This was a self-help organisation, established in 1991 to support parents or expectant parents with affected fetuses or children. For parents of fetuses/children with isolated CLP, joint counselling with plastic surgeons was offered within 2 to 3 weeks to provide further information and answer questions, by which time the full karyotype usually becomes available. The plastic surgeon played an important role in the joint counselling. The couples were then allowed to decide whether to abort the fetuses or to continue with the pregnancies. They were encouraged to think over the issue and to call back if they finally decided for abortion. Feticide by means of intra-cardiac injection of potassium chloride prior to medical termination by vaginal misoprostol was not routinely offered, if TOP was to be performed after 22 weeks of gestation. Twenty-four gestational weeks is the legal limit for TOP in Hong Kong. For those opting to continue the pregnancy, follow-up scans for fetal growth and any progression of the extent of the CLP were arranged in the third trimester. Nurse specialists also played an important role in the emotional support of the couple, irrespective of their choice. The entire study

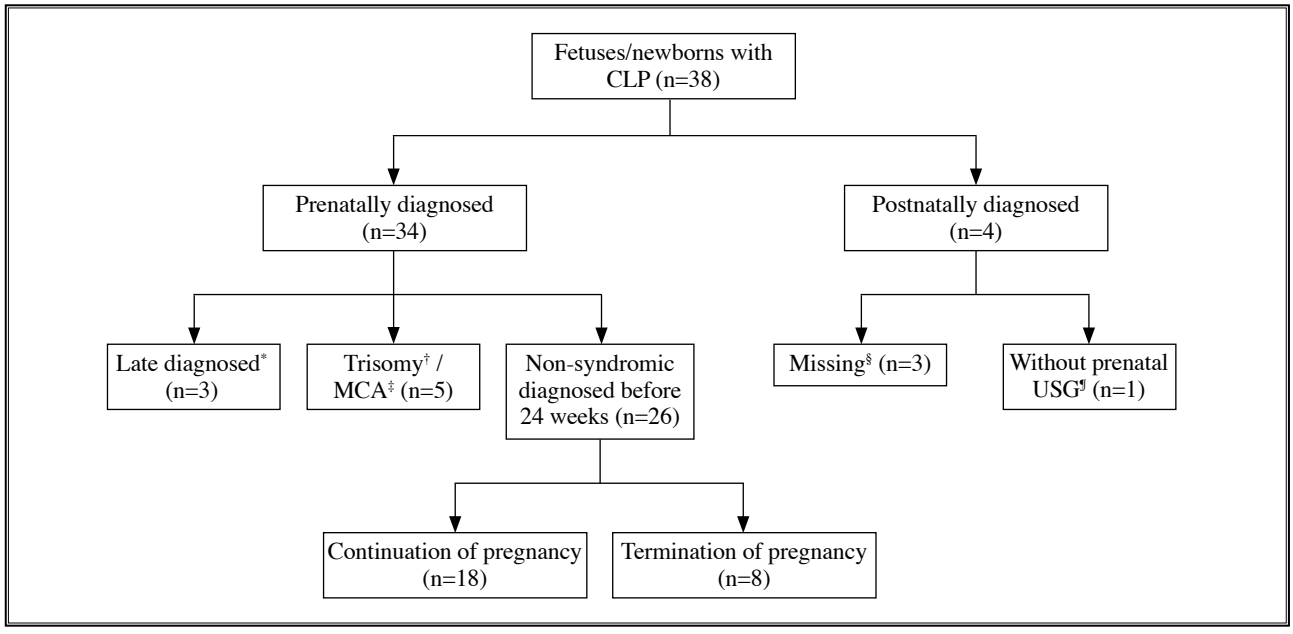

Figure. Prenatally and postnally diagnosed cleft lip with or without cleft palate (CLP)

* Late diagnosed at 30, 35, 39 weeks

† 3 Cases of trisomy 13

‡ Multiple congenital abnormalities: 1 case of central cleft lip and palate, hydrocephalus; 1 case of left cleft lip and palate, pyelectasis and abdominal cyst ended up in infant death at 4 months (karyotype: 46 XY; multiplex ligation-dependent probe amplification detected deletion of 7q and duplication of 7p subtelomeric regions)

§ 1 Case with an anomaly scan performed for advanced age (L cleft lip and alveolus); 2 cases with anomaly scans performed in the low-risk group (R cleft lip and alveolus)

¶ Left cleft lip and alveolus, right clubfoot and malformed toes, malformed L eye and left frontal skull defect (normal karyotype)

protocol was approved by the local clinical research ethics committee.

Statistics

Prevalence and detection rate as well as associated abnormalities were collated as basic descriptive statistics. For those with a prenatal diagnosis of non-syndromic CLP before 24 weeks of gestation, Chi-square tests and univariate analyses were performed to analyse putative factors possibly affecting parental choice on TOP.

Results

During the 6-year study period, out of 34,232 births there were 38 fetuses or newborns with CLP. All of these patients were Chinese. The overall point prevalence of CLP was 1.11 per 1000 births. The prenatal CLP detection rate was 89% (34/38). Among those diagnosed prenatally, three cases were diagnosed late (after 24 weeks of gestation). There were three cases with trisomy 13 and two with multiple congenital abnormalities (Figure). Among those detected postnatally, there were two cases with a syndromal problem or multiple malformations. The corrected frequency of CLP (after excluding those with syndromal and chromosomal abnormalities) was 0.96 per 1000 total births (33/34,232).

There were 26 cases of non-syndromic CLP detected prenatally (before 24 weeks of gestation). Eighteen couples decided to continue the pregnancies while eight opted for TOP, giving a TOP rate of 31%. The demographic and social characteristics of the couples described as per the National Statistics Socio-economic Classification[3] are listed in Table 1, while the prenatal characteristics of both groups are listed in Table 2. There was no apparent association between the various demographic or social factors and the parental decision on TOP. There was also no significant association between the decision and the gender of the fetus, presence of unilateral or bilateral CLP, or involvement of the palate. The only significant factor was attendance for joint counselling with the plastic surgeon. Nearly all (16/17) of the patients who had attended such joint counselling decided to continue their pregnancies. While a majority (7/8) of those who opted for TOP had not turned up for the joint counselling appointment.

Discussion

Diagnosis

Based on conventional 2-dimensional (2D) prenatal anomaly ultrasounds cited in the literature[2], the prenatal detection rate of CLP for the low-risk group was 20 to 40%. The detection rate for CLP is reported to improve significantly over time, owing to improved awareness and technology.[4,5] The prenatal detection rate of cleft lip in our series approached 90%, which was comparable to figures around the world. Moreover, nearly all of the cases with prenatal suspicious involvement of the palate that were then delivered or underwent TOP in our department were confirmed to be accurate. However, since about half of the TOP cases were carried out outside our department, involvement of the palate could not be accurately ascertained. Therefore, the accuracy of prenatal detection with respect to cleft palate could not be calculated.

In the recent few years, this congenital anomaly could be better visualised by recourse to 3D ultrasound examination[6,7]. The palate can be seen in the coronal plane by the 'reverse-face view'[8] and the axial plane by the 'flipped face view'[9]. However, both 3D views can be affected by acoustic shadowing. Information regarding the extent of the defect and the presence of associated abnormalities may still be incomplete. In the future, couples will be given even more precise information about the extent of any orofacial clefting in their fetus as well as the prognostic implications for the child.

Decision-making for Termination of Pregnancy

In the present study, one of the reasons for the absence of any association between the common demographic and social factors and the decision for TOP could be attributed to the small sample size. It may nevertheless be worth discussing this issue with affected couples from an ethical and social perspective.

Prenatal diagnosis is a double-edged sword. It provides valuable information about whether the fetus is normal or affected by birth defects early in a woman's pregnancy, and in the event of an affected fetus, early diagnosis enables parents to make advanced preparations for the arrival of the compromised child. On the other hand, due to the so-called 'diagnostic-therapeutic gap' in prenatal diagnosis, the only definitive treatment available for most hereditary and congenital diseases is abortion, until such a time in the future when fetal surgery or gene therapy becomes routine medical practices. It should be noted that work from Chervenak et al[10] has clearly described obstetrical ultrasound as an autonomy-enhancing strategy. By this clinical strategy of 'prenatal informed consent for a sonogram', pregnant women will have access to the diagnosis of serious fetal anomalies and therefore access to abortion as a possible way to deal with them[10,11].

Although most women in the West believe that they

Table 1. Demographic and social characteristics of the prenatally diagnosed (before 24 weeks) non-syndromic group

Characteristic*	Mean ± standard deviation, or No. (%)		p Value†
	Pregnancies continued (n=18)	Pregnancies terminated (n=8)	
Maternal age (years)	31 ± 5	34 ± 6	0.628
<35	15 (83%)	6 (75%)	
≥35	3 (17%)	2 (25%)	
Parity			
0	12 (67%)	5 (63%)	1.0
≥1	6 (33%)	3 (38%)	
Gestation at diagnosis (completed weeks)	19 ± 2.0	19 ± 1	-
Maternal education			0.876
Primary	0	0	
Junior secondary	3 (17%)	2 (25%)	
Secondary	8 (44%)	3 (38%)	
Tertiary	7 (39%)	3 (38%)	
Maternal occupation			0.928
NS-SEC Class I-II	5 (28%)	2 (25%)	
NS-SEC Class III-IV	7 (39%)	4 (50%)	
NS-SEC Class V-VII	2 (11%)	1 (13%)	
Housewife	4 (22%)	1 (13%)	
Paternal age (years)	35.6 ± 5.8	38.3 ± 7.5	0.899
Paternal education			0.334
Primary	0	1 (13%)	
Junior secondary	1 (6%)	0	
Secondary	8 (44%)	2 (25%)	
Tertiary	9 (50%)	5 (63%)	
Paternal occupation			0.675
NS-SEC Class I-II	8 (44%)	4 (50%)	
NS-SEC Class III-IV	7 (39%)	4 (50%)	
NS-SEC Class V-VII	2 (11%)	0	
Unemployed	1 (6%)	0	
Couple had religious beliefs	3 (17%)	0	0.529
Planned pregnancy	11 (61%)	5 (63%)	1.0

* NS-SEC denotes National Statistics Socio-economic Classification

† Chi-square test, with Yate's correction where appropriate

should have the moral and legal right to abort a fetus for most conditions diagnosable prenatally, the number of requests for abortion appears to increase with the severity of the fetal condition. For example, in an earlier study, Wertz et al[12] reported that about 20% of women opted for aborting a fetus diagnosed to have cystic fibrosis or other comparable condition, 35% for anticipated moderate mental retardation, 41% for neural tube defects, and 58% for severe mental retardation. Moreover, in a recent qualitative study conducted among 400 university students in Hong Kong, many took the conditional position that prenatal diagnosis would be acceptable if it could diagnose and prevent serious genetic conditions. However, the students were unable to agree on whether three common antenatally diagnosable conditions (thalassaemia, Down syndrome, and cleft lip) were serious enough to warrant this approach[13]. Given the difficulty and uncertainty in defining the 'seriousness' of a genetic disorder, we are left

Table 2. Prenatal characteristics of the prenatally diagnosed (before 24 weeks) non-syndromic group

Prenatal characteristic	Pregnancies continued (n=18)	Pregnancies terminated (n=8)	p Value*
Fetal cleft			0.281†
Unilateral (R/L)	2/11	2/6	
Bilateral	5 (28%)	0	
Prenatal suspicion of involvement of the palate	18	8	1.0
Fetal gender			1.0
M/F	10/8	5/3	
Amniocentesis performed	16 (89%)	6 (75%)	0.563
Joint counselling attended	16 (89%)	1 (13%)	<0.001

* Chi-square test, with Yate's correction where appropriate
† Unilateral vs bilateral

with two ethical questions unanswered. First, "Is it possible to draw a line that separates the conditions that justify abortion from those that do not?", and second, "By what standard is the line drawn?" In this context, the subsidiarity principle raises another poignant question: 'Are there "milder" alternatives to deal with prenatally diagnosed genetic diseases besides abortion?' Or, 'Are there ways to reasonably and satisfactorily control the genetic condition postnatally, instead of eliminating the fetus prenatally?' This may challenge a pregnant woman's decision to abort a fetus identified as having a non-lethal and minimally handicapping condition such as CLP.

The difficulty finding a universal standard to separate genetic conditions that warrant abortion from those that do not is further underscored by reports in the literature suggesting that a woman's decision is influenced by many other considerations. These include cultural, religious, legal, and social factors[14]. For example, in Israel, in 24 cases of isolated CLP diagnosed at 13 to 16 weeks of gestation, 23 (96%) of the women chose abortion[15]. In this cohort[15], the decision to abort was partly facilitated by the early diagnosis (at 14-16 weeks) before significant maternal-fetal bonding took place, and partly and perhaps more importantly because all 24 couples were given the chance to consult parents with CLP children. The latter parents intimated that they would opt for abortion if CLP were detected in subsequent pregnancies, strongly suggesting a negative perception about the social worth of rearing such a child in Israel[15]. On the other hand, in Hawaii, nine (28%) out of 32 women with CLP fetuses elected abortion[16], and in California only two (25%) out of eight women with CLP fetuses diagnosed before 22 weeks of gestation underwent abortion[17]. In the United Kingdom, three (10%) women out of 30 with CLP fetuses elected abortion, and notably two of the abortions were performed due to the presence of multiple abnormalities including holoprosencephaly[18]. A more favourable 'perception of the burden' from CLP and a more positive assessment of the quality of life of the disabled child by the society probably explains the relatively low abortion rates in the United States and the United Kingdom. These findings suggest that if the pregnant woman perceives that the society will be accepting, supportive or at least tolerate her disabled child, she may be more likely to continue with the pregnancy. Alternatively, if she perceives that her disabled child will be greeted with a high level of stigmatisation and prejudice, she may decide to terminate the pregnancy. In an Argentinean study, none of the 165 pregnant women with CLP fetuses would terminate their pregnancies[19]. Religious beliefs that accord moral status to fetal life and legal restraints to abortion due to societal values explain the zero abortion rate. These studies suggest that the decision to abort is probably the product of the interplay of many personal and social factors.

In our cohort, eight (31%) out of 26 women opted for abortion and was at the middle range among a variety of countries. In Hong Kong, Chinese women with CLP pregnancies probably share many of the concerns that their western counterparts have. In addition, the Chinese people have some unique cultural biases against disabled people that may result in social stigmatisation and isolation of both the disabled child and the family. This may incline a Chinese woman with a CLP pregnancy to consider abortion. For example, many Chinese, especially those living in relatively backward rural areas in Mainland China, believe that children born with deformities are retribution for wrongdoings committed by familial ancestors, or may even be perceived as "monsters or ghost, or foreign spirits

that come to the parents as punishment for sin"[20]. Thus, it is hardly surprising that most affected pregnancies are aborted, and those who have escaped abortion are treated with cruelty and are often killed at birth or abandoned at a very young age to become street beggars. In the more modernised cities of China such as Hong Kong or Shanghai, rejection of humans with physical deformities has been driven by beliefs of a different sort. In such cities competition is keen, and performance, progress, and perfection are considered essential for survival. Thus, mothers pregnant with a minor condition such as CLP are under major pressure to choose abortion. Studies have indicated that people in Hong Kong show a "…cultural bias to a less positive attitude towards persons with disabilities"[21]. One study showed that parents perceive their own adolescents with CLP as emotionally disturbed, and that their negative behaviours and emotions could be linked to their disability[22]. The same study found that teachers also have lower expectations for students with CLP because of their perceived emotional disturbance, and employers view them less favourably and as having inferior interpersonal skills[22]. These negative perceptions about CLP patients are ungrounded and related to biases and prejudices of a community that over-estimates competence and competitiveness. Hunt et al[23] have reviewed 117 scientific research reports (8 were in languages other than English) on the psychosocial effects of CLP among children and adults. They concluded that "Although there is some limited evidence to suggest that individuals may encounter psychosocial problems…overall adjustment and functioning appear to be reasonably good"[23]. Social prejudice adds pressure on CLP victims and is confirmed by a recent study in Shanghai which shows that Chinese adults with CLP demonstrate excessive social anxiety[21]. This was defined as "anxiety that occurs as a result of one's being concerned about others' evaluation and perception of him and her" than unaffected controls. Affected subjects also had lower scores for measures of self-esteem. Thus, it seems that until social values are radically transformed in the minds of these Chinese, CLP and other similar deformed persons will continue to be victimised.

Counselling

The importance of societal and cultural values in the woman's decision to abort a CLP pregnancy highlights the critical role of genetic counselling in the management of pregnancies affected by CLP. Ethical medical practice has always recommended eschewing directive counselling in favour of non-directive counselling. Directive counselling entails exerting undue influence on the woman to make a decision one way or another. The non-directive approach reaffirms the woman's right to make the choice that is most consistent with her values and preferences. However, for this approach to be ethical, it must be balanced and enable the woman or couple to make a truly informed decision. Balanced counselling implies the provision of accurate and unexaggerated information about the negative and positive aspects of the condition, including any cultural taboos and biases that may have unfairly prejudiced against or for a decision. Regarding CLP, balanced counselling should also point out any distorted societal values that tend to unjustifiably belittle the potential of persons with the condition to have normal life experiences and make valuable contributions to society. From our past experience, the presence of significant cleft palate appeared to be a crucial determinant for some couples in deciding TOP. However, this was not borne out by data from this study, as cleft palates were present in the majority of fetuses in both groups. This study showed that nearly all of the mothers continue their pregnancies after attending joint counselling with plastic surgeons. However, potential pre-selection bias may have occurred. Perhaps willingness to attend the joint counselling already reflected the mind-set of those with a higher chance of accepting an affected fetus. One criticism of our approach could be the relatively long interval between the joint counselling and the initial diagnosis of CLP. This may have allowed anxiety of the couple to build up and result in a higher termination rate. A shorter interval of 5 to 7 days is currently employed for the following two reasons — amnio–polymerase chain reaction can provide results within 2 to 3 days; some couples opt not to have amniocentesis in view of negative universal Down syndrome screening results.

Broader Ethical Issues of Prenatal Diagnosis

That a significant number of women elected abortion after early prenatal diagnosis raises two other serious and related moral questions. First, despite the primacy of patient autonomy in the West, one must seriously question whether TOP is solely the right of the woman, and has nothing to do with the fetus (a nascent human life). Is the negative impact of a CLP really more important than the value of a nascent life? If a child with a surgically repaired CLP is less than normal, how normal does a child have to be before society allows him or her to experience it? The medical profession must also be more cognisant of the fact that medical advances in prenatal diagnosis have unintentionally reinforced the notion that all fetuses must be perfectly 'normal' or they should not be born. Second, if a non-lethal and surgically reparable condition such as CLP is widely accepted as a legitimate basis for abortion, then the fundamental rationale for prenatal diagnosis must be re-examined. Surely, prenatal diagnosis is meant to

detect serious disabling and life-threatening conditions. Or has it become a tool to serve the purpose of a market- and consumer-driven eugenic programme that mandates 'only perfect babies will live'? It is a moral question that society and the medical profession cannot escape. In that sense, whenever a woman makes the decision either to terminate or continue her pregnancy with a CLP fetus, her decision has much wider societal implications than she is aware of.

Conclusion

Advances in prenatal diagnosis have improved the detection of congenital facial cleft. Our detection rate is comparable with reported figures. A multidisciplinary approach with contributions from plastic surgeons in joint counselling is essential and potentially beneficial to the patients and their families. Such counselling provides prospective parents with better information to make informed decisions, whilst their autonomy is enhanced. About 30% of prenatally detected cases in our cohort eventually opted for TOP. Although we are unable to identify any single significant factor that may have affected their decision, we propose it might be related to the underlying mind-set of affected couples in accepting this kind of congenital defect. Nevertheless, balanced counselling may also have played a part in the decision. Of late, we have shortened the interval from the diagnosis to joint counselling with a plastic surgeon, to avoid the potential negative effect of a long waiting period. Moreover, we should all be aware of the ethical issues around the prenatal diagnosis of CLP that are relevant to the couple, to medical professionals, and to society as a whole.

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