(globular) and maxillary processes. The globular process also forms the primary palate which holds the maxillary central and lateral incisors and extends backward to the incisive papilla. This in turn unites with the secondary palate which is derived from the palatine processes of the maxilla. True fusion takes place in this last process but not in the formation of the face. Cleft lip is thus a failure of mesodermal penetration with resultant “ripping” along the line of the so-called maxillary and median nasal swellings. Whether hypoplasia of the lateral swelling made for failure of mesodermal penetration between the maxillary and median nasal swellings is, of course, debatable.

ROBERT J. GORLIN

REFERENCE


Studies on symmetrically conjoined twins

To the Editor:

In his recent article (J. PEDIAT. 69: 643, 1966) Dr. Milham presented a sample of 22 sets of symmetrically conjoined twins whose records were abstracted from all live-birth and fetal-death certificates registered in the State of New York (excluding New York City) over a period of twenty years. His sample revealed that conjoined twins are predominantly female and that they tend to be premature with low birth weights. Of the 22 sets, only 7 (31.8 per cent) were live births. Among the mothers of these twins, an excessive number of stillbirths occurred in their previous pregnancies. He also reported a possible nonrandom seasonal pattern in date of conception.

In connection with a major study of cleft lip and palate, the Epidemiology Branch of the Dental Health Center has received, on a continuing basis from 31 reporting areas, all live-birth certificates on which a congenital malformation of any kind was mentioned, along with a systematic 1 per cent control sample of birth certificates of nonmalformed babies. The advantages and disadvantages of data obtained from birth certificates are discussed elsewhere. Although representative of a larger geographical area than Milham’s, our data cover only the years 1962 to 1965. Data from New York State are not included in our sample.

During four years of data collection, we have identified 43 sets of conjoined twins from certificates of live birth. If the true proportion of live births to fetal deaths in conjoined twinning is as found in Milham’s sample, then for our 43 sets of live-born conjoined twins an additional 92 sets of conjoined twins would be expected to be stillborn in the same period. Based on our data, the incidence of live-born conjoined twins is one set per 200,000 live births, and conjoined twins represent 0.05 per cent of all live-born twin sets.

It is interesting to compare our data with those of Milham’s, although they are not totally comparable. In his sample the length of gestation averaged 33 weeks, while in ours it averaged 36.5 weeks, a difference one might expect to find between a series consisting predominantly of fetal deaths and another consisting exclusively of live births. The sex distribution for our sample was two female to each male infant (28 female sets; 13 male sets; 2 sets, sex unknown), which is very different from Milham’s 20 female to each male infant. All 7 of Milham’s live-born sets of twins were female.

It has been postulated that the major cause of conjoined twins is aging of the ovum. Our data do not support this hypothesis. In our control group of nonmalformed multiple births, 64 per cent of mothers and 44 per cent of fathers were under thirty years of age and 85 per cent of mothers and 65 per cent of fathers were under 35. In our sample of conjoined twins the parents were somewhat younger than in the control group. Sixty-three per cent of the mothers and 55 per cent of the fathers were under thirty; 91 per cent of the mothers and 76 per cent of the fathers were under thirty-five. In Milham’s sample of conjoined twins the parents were even younger. Seventy-three per cent of the mothers and 60 per cent of the fathers in his sample were under thirty, whereas a full 100 per cent...
of the mothers and 95 per cent of the fathers were under thirty-five. The slightly older ages of parents in our control group may be a reflection of the inclusion of dizygotic twins who tend to be born to older parents. Zygosity of twins is not recorded on birth certificates.

By computing month of conception, Milham found that 17 (77 per cent) twin sets in his sample were conceived during the months of July through December. No seasonal variations were found in our data based on live births; however, both sets of data are quite small for determining seasonal trends.

Additional investigations to obtain more detailed clinical information on conjoined twins would seem worthwhile.

CAROL BENDER, PUBLIC HEALTH ANALYST
CONGENITAL ANOMALIES SECTION
EPIDEMIOLOGY BRANCH
DENTAL HEALTH CENTER
14TH AVE. AND LAKE ST.
SAN FRANCISCO, CALIF.

REFERENCES

Complication resulting from an intramuscular injection

To the Editor:

The article by Talbert, Haslam, and Hallei (J. PEDIAT. 70: 150, 1967) reporting a serious complication from an intramuscular injection in the midlateral thigh and the editorial comments by Dr. Hill (same issue, p. 158) are indeed commendable.

One may estimate that over half a million injections are administered daily in the United States. It therefore behooves us to be concerned about complications of this procedure and give attention to means of their prevention. The site for injection is perhaps the most significant factor to consider.

In 1964 we1 recommended von Hochstetter’s site (ventral gluteal muscles) as the preferred location for all intramuscular injections. It was because we had observed some local postinjection discomfort, anxiety on the part of the patient from observing the procedure, and the lack of stable landmarks to outline the site that we recommended the lateral muscles of the thigh as second choice. The documented hazards from injections in the dorsal gluteal muscles make it the least desirable of the 3 sites.

I should like to encourage further the use of the ventral gluteal muscles as a safe site for injections. In 1956 von Hochstetter2 described the area of the ventral gluteal muscles as a site for injections. This area may be outlined by locating the anterior iliac tubercle, placing the index finger on the tubercle, and extending the middle finger tip along the crest of the ilium as far as possible, forming a triangle (Fig. 1). The injection is made in the center of the triangle with the needle directed slightly toward the

---

Fig. 1. von Hochstetter’s site for intramuscular injections in ventral gluteal muscles. (From Hughes, W.: Pediatric procedures, Philadelphia, 1964, W. B. Saunders Company.)